

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS.

Club Secretaries and others desirous of announcing the date of important fixtures are invited to send particulars for inclusion in the following list:

Sept. 26 ... No. 40 Squadron R.A.F. Dinner.
Oct. 5 ... Aviation Meeting at Barcelona.
Nov. ... Entrance Examination for R.A.F. College.
Dec. 19 to ... Paris Aero Show.
Jan. 4, 1920.

EDITORIAL COMMENT



APPARENTLY there is trouble in the Department of Civil Aviation owing to the parsimony of the Treasury in the matter of the salaries of the civilian staff. It is stated that the whole of the *personnel* of two sections have refused to sign on unless the terms of engagement are radically altered and the pay brought more into line with the times. It is pointed out that, under the new scale,

Pay in the Department of Civil Aviation

a major employed on the Air Ministry staff receives consolidated pay at the rate of £900 per annum, while a demobilised major who has reverted to civil employ in the Ministry receives from £400 to £600 a year for performing the same duties. Obviously, there is something wrong somewhere. Either the officer on the active list is paid too highly for his work or, alternatively, the civil rates of pay are too low. The conclusion that forces itself upon us is that it is the latter.

The Treasury, in fixing the rates of pay, appears to have ignored the fact that the men who are engaged in the attempt to develop civilian aviation are highly trained specialists who can, as a rule, command high salaries outside Government employ, and that if it is desired to keep them they must be paid accordingly. It is not only that the difference in emoluments between the military and the civilian elements of the staff is markedly great, but the position is even more anomalous than appears at first sight.

The military branch, which receives from 30 to 50 per cent. more pay than the civil staff, has a pension to look forward to at the end of service. The civilian staff, on the other hand, not only are denied that advantage but are only engaged for a year, with no certainty at all that their engagements will be renewed.

The obvious question that has to be asked is whether or not the Government is sincere in its expressed determination to assist in the true development of aviation. If it is, then it must make up its collective mind to instruct the Treasury that the men who are indispensable to the proper carrying out of the task must be paid at least enough to tempt them to remain in the service. If it is not, then let us know at once so that we may know where we stand.

To our way of thinking there is nothing of economy in driving the best men out of the Civil Aviation Department to seek a livelihood elsewhere. We have a long road to travel in the development of aviation, and it is to those men we are looking to keep the Empire in the lead of the nations where aerial navigation is concerned. If we lose them through parsimony then we lose our lead in the air.

**The Future
of the
R.A.F.**

Still the rumours of an impending dissolution of the R.A.F. are going the rounds! Official denials notwithstanding, they continue to be repeated, until we really begin to wonder whether there is not fire behind the smoke. According to the diarist of the *Pall Mall Gazette*, he hears "on good authority" that the R.A.F. will shortly cease to exist as a separate arm. "As long," he says, "as the Independent group of the R.A.F. was in existence there was a certain amount of excuse for the R.A.F. considering itself a separate arm, but now that the war is over and the bombing of enemy country a thing of the past, it is unnecessary to preserve the R.A.F. as a distinct force from the Army and the Navy."

Dogmatic, to say the least! Were it not that we know the *Pall Mall* to be deeply in the confidence of certain members of the Government, we should probably regard such a statement as this as being a lucubration of a diarist hard up for a topic to discuss in the columns of his journal and, hearing the gossip of the clubs, setting down the first thing that came into his mind. As it is, however, we take it more seriously than that, and are fain to ask what is behind it all? Is economy to run mad and is the R.A.F. verily to be scrapped? Is this not a *ballon d'essai* thrown up by the Government to see how such a proposal will be taken?

We do not propose to recapitulate all the arguments we have used on so many occasions against any such suicidal policy as that enunciated. Our readers are perfectly familiar with them and we will not weary them further. It is enough to say in this connection that the Parliamentary group which interests itself in aviation must be on the alert to stand between the R.A.F. and its enemies. Incidentally, it may be useful to quote from a letter to the *Telegraph*, written by Col. Fullerton, in which he cogently and succinctly sets forth the whole case for the existence of a separate Air Service. He says:—

"In order to understand the true function of an Air Force, it is necessary to consider the work done by the forces composing the national fighting machine. The Army has to drive back or capture the advanced land forces of the enemy, the Navy performs similar duties as regards his sea forces, while the Air Force has to assist both by breaking up the lines of communication, destroying depôts, etc., and thus preventing reinforcements of men and material reaching the fighting fronts. In all previous wars the necessity for destroying communications was fully recognised, but the difficulty in doing so was so great that practically little or nothing in that way was accomplished. The invention of the flying machine has, however, altered all this, and it is now possible for a well-managed air service to so damage an enemy's bases and lines of communication that retreat or collapse of his field forces is inevitable. But in order to ensure these duties being successfully carried out, an aerial campaign on an immense scale will be necessary. Hundreds of squadrons will be required, backed up by large reserves, the whole acting on a clear and definite plan, prepared and carried out just as carefully as those drawn up for the Army and Navy. The duties in connection with this aerial campaign will be very heavy, and a great deal of technical knowledge will be necessary for its conception and working; while the strategical and tactical operations, differing as they do very largely from those of the land and sea services, will require officers specially trained in such work to organise them successfully.

"It is quite clear that no War Office or Admiralty could carry out such large and important operations in addition to its own work, and a separate Air Service independent of both the Army and Navy (but acting in conjunction with them when required to do so) is absolutely necessary. By all means, let us have retrenchment, but do not damage the efficiency of the fighting forces to save a few pounds."

If the people who are so keen on seeing the R.A.F.

thrown to the dogs will read intelligently and properly digest these words of Col. Fullerton who, both as soldier and aeronaut, knows well of what he speaks, they may see reason to change their opinions. Anything more convincing we do not remember to have read.

**Yellow
Press
Methods
Again**

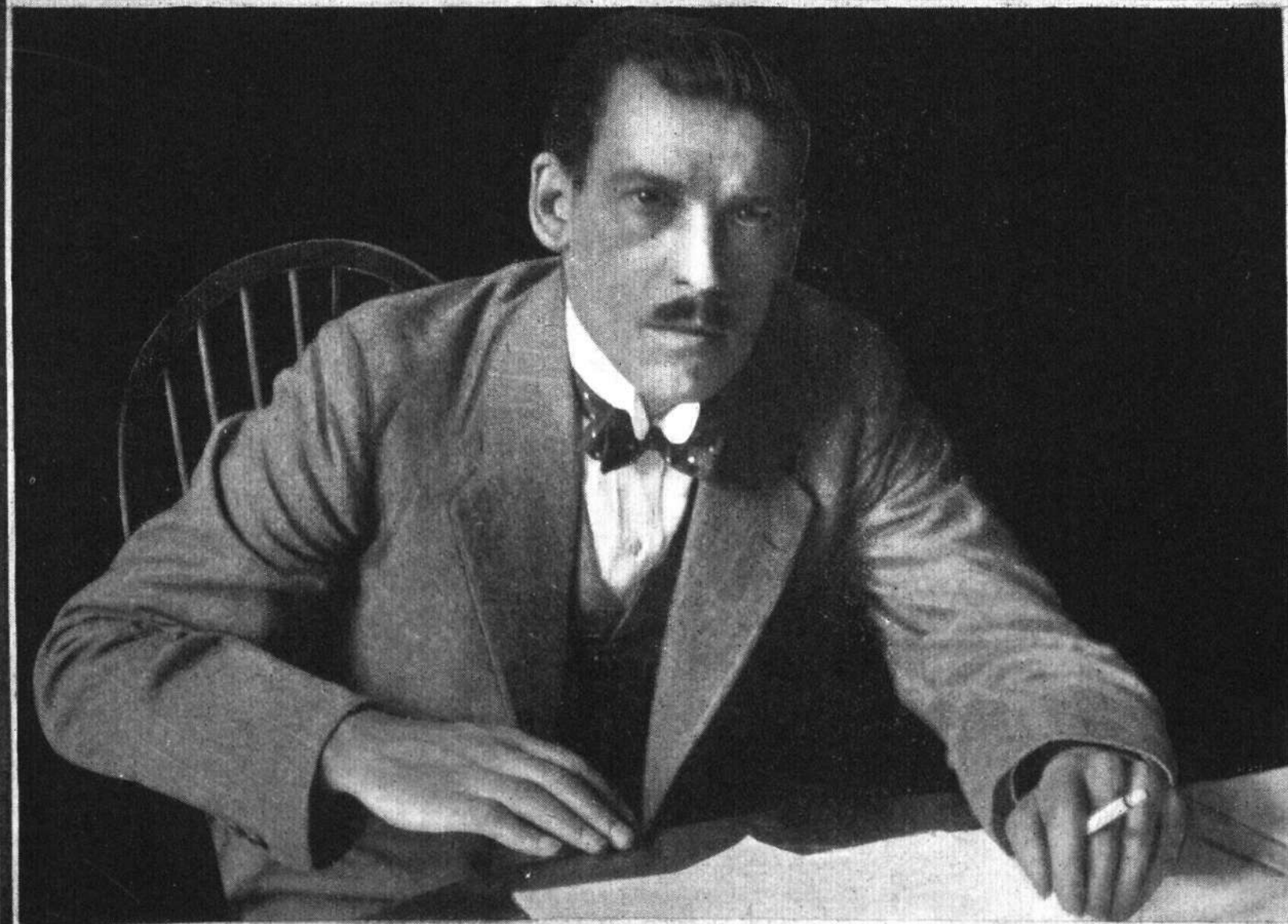
One day last week the *Evening News* came out with great "scare-heads" announcing a "Blow to British Aircraft Builders," and made great play with the wholesale discharges which are alleged to be taking place at aircraft works all over the country. The "Economy Axe" had fallen and the Government apparently was determined that nothing but the ruin of the industry was to satisfy the economists of Whitehall. We cannot sufficiently deprecate these "yellow" methods of evening journalism. Certainly discharges are taking place at aircraft works, but not at all as a consequence of any new economy campaign originated by the Government. As a matter of fact, discharges have been taking place ever since the armistice, as was clearly inevitable. The whole world knows, as an official states, that we had bent almost the major part of our energies to the output of decisive aircraft, and it was obviously impossible to maintain the same high pressure of production after the war had been won. To have done so would have meant the expenditure of tens of millions of pounds on machines which would have been entirely superfluous and so much waste. True, there were contracts running which could not be immediately cancelled, and there were many hundreds, if not thousands, of machines and aero-engines in such an advanced stage of construction that they could only be pushed on to completion, since it was cheaper to finish than to scrap them. Naturally, this sort of thing must come to an end some time or other, and it is coming to an end now. Consequently, further discharges are taking place in the factories. Further, the *Evening News* has just discovered, and makes a great song about its discovery, that certain works hitherto devoted to the building of aeroplanes are now driven to the expedient of manufacturing milk-churns and motor-car bodies. That we have known for a very long time, and really fail to see anything remarkable in the fact that firms whose plant is suitable for the making of these articles should have turned from the arts of war to those of peace as soon as they could. To our mind, it shows a very commendable spirit of enterprise and is nothing to throw up at them as evidence of their being in desperate straits.

These "stunts" do no good to anyone—even to the journal indulging in them. On the other hand, they may do harm by assisting to shake the confidence of the public in an industry which really requires all the assistance it can get at the present juncture. The *Evening News*, in its effort to scare up a little passing sensation, has only made itself look ridiculous, but it has done a disservice to a deserving industry.

Major Lloyd writes in the correspondence columns of the *Daily Mail* on bad flying at civilian aerodromes, and has one or two things to say that may very well be taken to heart by those engaged in the promotion of civil aviation. He points out that in the R.A.F. the commonest cause of a flying accident has been found

Flight—And the Men

SEPTEMBER 25, 1919



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FLIGHT
Illustrated
Magazine

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Lieutenant-Colonel SPENSER D. A. GREY, D.S.O., a Member of the Royal Aero Club Committee, who did splendid work in the R.N.A.S., and later in the R.A.F.

to be an "error of judgment on the part of the pilot." In flying, this cause in nearly every case is the ultimate reason for a crash. It might be expected, therefore, that companies embarking in commercial aviation would be most careful in their selection of pilots in order to reduce to a minimum this almost uncontrollable human element of danger. Major Lloyd doubts if this is so, and quotes his own experiences as an eye-witness of bad flying at certain civilian aerodromes. We should not like to say that such bad flying is the rule, or even that it is done to any appreciable extent, but nevertheless the point is a very good one. It must be remembered that a single accident has more influence on the confidence of the public than a hundred flights accomplished in safety. The first everyone hears about, while the second are never talked about outside a small circle.

Major Lloyd proposes a drastic regulation for putting down bad flying. He would raise the status of pilots to that of the captain of a ship, and in case of a crash would permanently cancel his certificate. We are all for making flying as safe as it can humanly be made, but we are inclined to think the penalty too severe for general application. Where absolute default on the part of the pilot could be proved, we should not be averse to imposing such a penalty, but there are cases in which the human element is not exactly blameworthy, though possibly a little error of judgment which may admittedly have serious consequences has been committed, and here it seems that the immutable rule would work great hardship on the pilot. By all means let every case of accident be dealt with on its merits and where foolhardiness or sheer carelessness or incompetence has resulted in accident let the pilot have his certificate cancelled. But we cannot go all the way with Major Lloyd, who seems to be of the Spartan type of judge.

"The Future"

At last it would seem we are to have a definite announcement of the Government's industrial and economic policy. Indeed, we have already got the broad outlines of the procedure which is to govern our trade policy. Through the medium of a publication called *The Future*, which is described as a "Government statement of national needs and national policy," the executive has announced its autumn programme of legislation. The most important aspects of the programme are in the matter of trade policy, in connection with which it is announced that there will be free imports (with certain exceptions) from the 1st instant. There is to be no Government support of foreign exchanges except to prevent complete collapse, and no dumping of foreign goods at sweated prices. Powers are to be taken to prevent any flood of imports competing unfairly with British goods through a collapse of exchange in the country of origin. There is to be protection of "unstable key industries," which are defined as (a) products essential for war; (b) industries so neglected before the war that there was an inadequate supply of their products; (c) industries which it was found necessary to foster

and promote during the war; and (d) industries that cannot maintain the level of production essential to the nation without Government support. At the same time it is made clear that no undue profits are to be made at the expense of the community by reason of protection of such unstable "key" industries.

Generally speaking, all this is admirable if the practice can be made to fit the theory. Undoubtedly it is essential, to take the point regarding the prevention of the flooding of the market by low-priced goods through a collapse of exchange in the country of origin, that industry should be protected against a manifest menace. Obviously, this is initially directed against Germany, where the exchange has collapsed to an extent which would enable her to swamp this country with commodities with which our own manufacturers could not hope to compete. We want money from Germany and we certainly do not want, nor can we afford to pay her any save for articles of commerce which we are unable to produce for ourselves, except so far as trading might help to bring greedy profiteers to their senses. Apart from that, it is but fair that our own industries should be safeguarded from a form of competition which results from the position which Germany as an enemy country and a defeated one fortuitously finds herself. It would be unthinkable that Germany should actually be allowed to benefit from her crimes.

In the matter of "key" industries, we imagine that everyone will agree with the Government view that these must be protected. How nearly Germany won the war through her insidious policy of underselling us in the home market in "key" productions is a matter of too recent knowledge to need emphasising now. If we take the case of the magneto, which was the key to the aeroplane industry, and regard how, by a scientific system of obtaining a monopoly of the British market so that we were, at the outbreak of war, not producing more than a hundred of these essential machines per week, we shall see how important it is to maintain our key industries against such competition. Cases could be multiplied of how well and carefully Germany prepared for war by ensuring that "The Day" should find us dependent upon herself for many of the products essential for war. Apart from risks of further wars, we have created our own "key" industries, and they must not be filched from us for want of the essential protection. At the same time, it is well that the warning should have been given that undue profits will not be allowed to be made at the expense of the community by reason of the protection of these industries. Unfortunately, bitter experience of shameless profiteering has made the mass of the people very suspicious of proposals for the protection of industry. They see in such proposals merely fresh levers for the use of the profiteer, and we are pretty well convinced that if a plebiscite of the electors were taken on the question of protection of industry without guarantees against the making of undue profits, there would be an overwhelming majority against such protection.

Church's Gift to R.A.F.

VICE AIR-MARSHAL SIR GODFREY PAINE, Inspector-General R.A.F., opened, the other day, at Netheravon an institute which has been presented to the R.A.F. by the Church of England Board for the welfare of the Imperial Forces in the diocese of Salisbury.

Sir Godfrey emphasised the fact that it was the first insti-

tute presented by anybody to the R.A.F., and the gratitude of the whole of the R.A.F. was due to the Board for its munificent gift. The institute, which has been erected at a cost of £4,000, has accommodation for 600 persons, comprises a lounge hall, billiard-room, buffet and a chapel or devotional room, which was dedicated by the Bishop of Salisbury, who presided at the function.



THE BALLOON STRAFER: A D.H. 5 at work.

By J. McGilchrist.

THE GERMAN D.F.W. COMMERCIAL FOUR-ENGINEED BIPLANE

IN spite of the handicaps caused by the Peace conditions, German aircraft firms are losing no time in getting going on their post-War commercial aeroplanes. Since the conclusion of hostilities several firms have commenced the construction of large multi-engine passenger carriers. Among these is the D.F.W. firm (Deutsche Flugzeug Werke), who have nearing completion a large four-engine biplane, designed to carry 24 passengers. This machine is a development of the military type built during the War, and before commencing a description of the commercial machine a brief reference to its prototypes may be of interest.

be 6,800 kg. (15,000 lbs.), and the various loads required by the military authorities amounted to 2,600 kg. (5,700 lbs.), bringing the total weight in flying trim up to 9,400 kg. (20,700 lbs.). The wing loading worked out at about 10.3 lbs./sq. ft., and the power loading at 23.5 lbs./h.p. With this loading the performance during the acceptance tests was as follows: 3,300 ft. in 10 mins.; 6,600 ft. in 25 mins.; and 10,900 ft. in 53 mins. The maximum speed attained was 130 km. (78 miles) per hour. After a flight of 2½ hours' duration the machine landed without mishap at Doberitz.

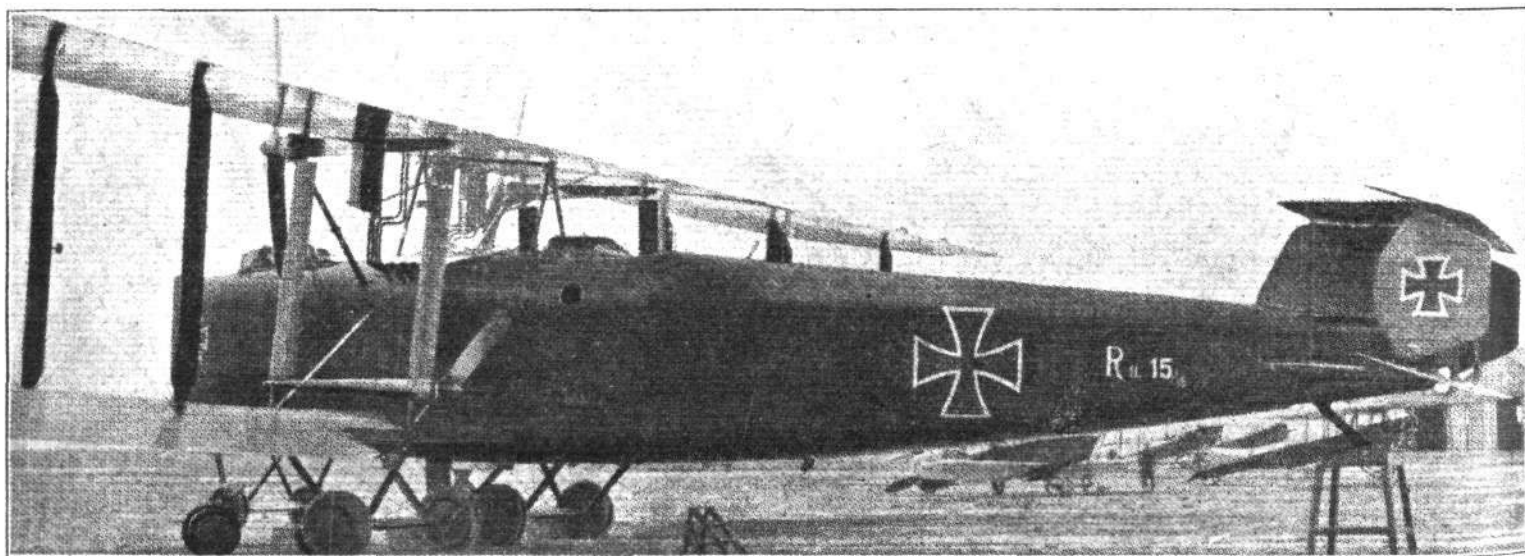
During further test flights at Doberitz—after the machine



THE D.F.W. MILITARY TYPE R II. : Three-quarter front view.

It was in September, 1915, that the D.F.W. works commenced the construction of their first multi-engine type, the R I. This machine was fitted with four 220 h.p. Mercédès engines placed in the fuselage and driving airscrews on the wings by means of bevel gears and shafts. The four engines were arranged inside the fuselage, two on each side, one above the other, leaving a central gangway between them. Under the floor-boards, in front of and behind the engines, the tanks were placed, three in front and three behind. The amount of fuel carried was sufficient for a flight of six hours' duration. Each engine was provided with a transmission-drive to airscrews placed on the wings, and the screws were

had been taken over by the Flying Service—trouble was experienced with the crankshafts, which continued to break. This was put down to the excessive length of the eight-cylindere engines, and also to faulty engine mountings. These were re-designed, and the transmission shafts were provided with universal joints. These alterations were completed in March, 1917, and towards the end of that month a trial flight of two hours' duration was made, during which no trouble was experienced. On April 30, 1917, the machine was flown across to the Eastern Front, the trip to Königsberg being made in 3 hours 55 mins. The experience gained with this type was so satisfactory that the D.F.W. works received

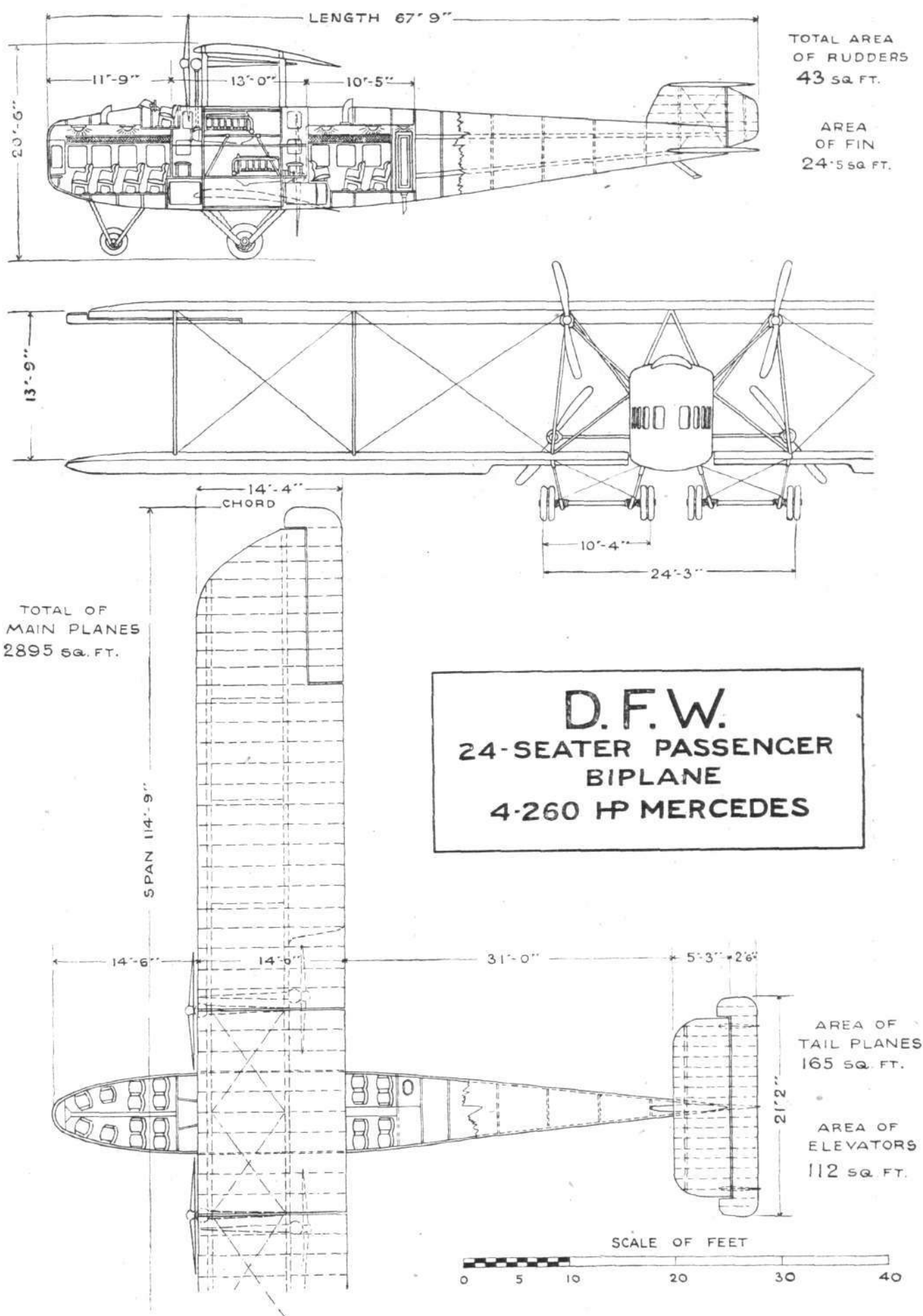


THE D.F.W. MILITARY TYPE R II. : Three-quarter rear view.

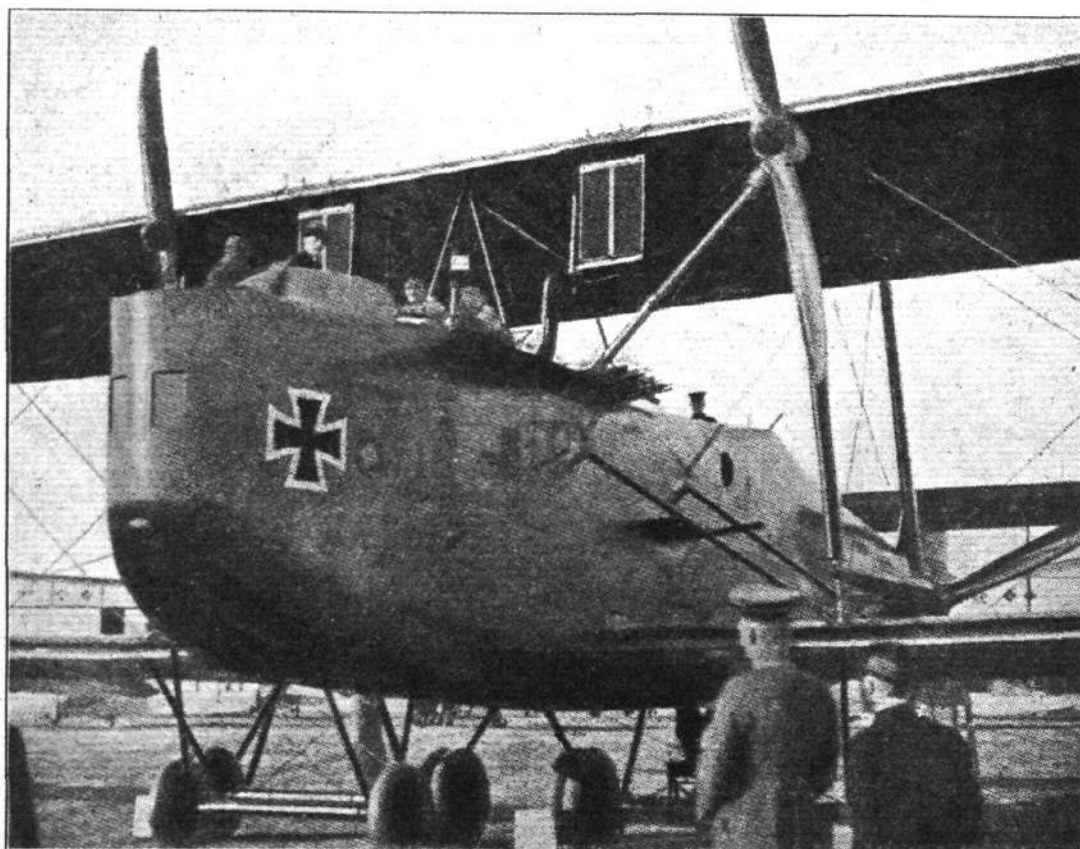
geared down to run at 900 r.p.m. Generally speaking, the power plant was so arranged that each engine, with its transmission-drive and propeller, formed a complete unit which functioned quite independently of the other three. The trial flights are said to have taken place without any breakdowns occurring, and after a total of eight hours in the air the machine was considered ready for her acceptance tests, which took place on October 19, 1916. When weighed for this test the weight of the machine empty was found to

an order for six more, these, however, to be fitted with four 260 h.p. Mercédès engines, and to be able to carry a useful load of 3,400 kg. (7,500 lbs.) instead of the useful load of 5,700 lbs. carried by the first machine.

The fitting of larger engines, and the demand for a higher useful load, necessarily resulted in a somewhat larger machine. This became known as the Type R II, the first of which was commenced in the early part of 1918. The transmission system was, generally speaking, similar to that of the R I.



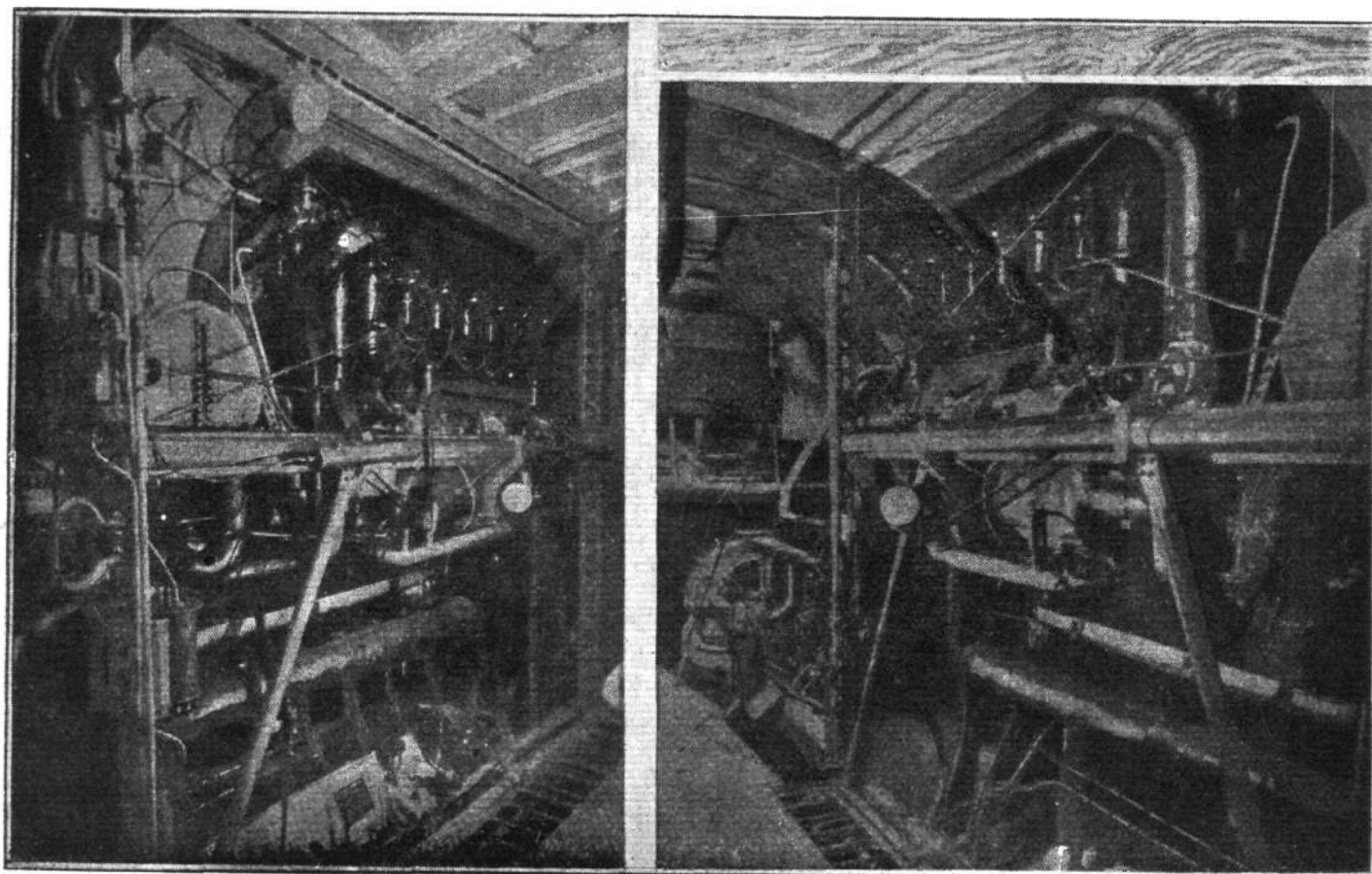
THE D.F.W. PASSENGER CARRIER : Plan, side and front elevations, to scale.

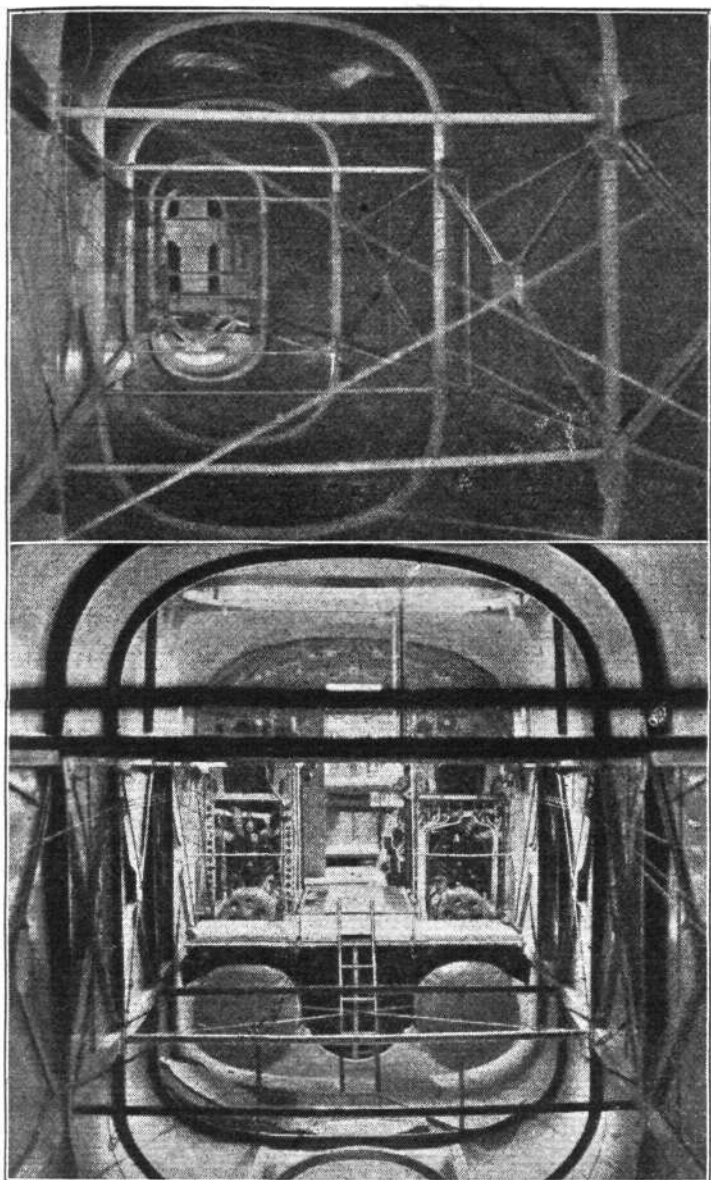


The first of the R II machines made its first trial flight towards the end of August, 1918. Again transmission troubles developed, and the transmission shafts, which ran at 3,000 r.p.m., showed excessive vibration. In order to stop this the shafts were enclosed in tubes, which arrangement appears to have had the desired effect, as no more transmission trouble was, it is said, experienced. The weight empty of the R II was 8,600 kg. (18,900 lbs.), and the total loaded

weight somewhere about 12,000 kg. (26,500 lbs.). The power load was 25.25 lbs./h.p., and the wing loading 9 lbs./sq. ft.

Before describing the 24-seater passenger machine, it might be mentioned that the D.F.W. firm had the drawings ready for a giant war machine, a side elevation of which is shown in the accompanying illustration. With the signing of Peace this machine was not required, and was, therefore,





Two views of the interior of the D.F.W. Military Type R II.: Top: Looking aft from the engine-room. Bottom: Looking forward through the engine-room to the pilot's cockpit.

never built. It is nevertheless of interest in showing the ambitious designs which were entertained by the Germans towards the end of the War. This machine, which, had it materialised, would have been the largest aeroplane in the

world—according to the Germans—was to be fitted with eight engines, each of 270 h.p., or a total of 2,160 h.p. The engines were to be started by a compressed air starter operated by an engine of 120 h.p. The same engine would probably be used for driving the electric generator furnishing current for lighting, heating, and wireless. In addition to an armament of eight machine-guns, the machine was to carry 5,500 lbs. of bombs. It will be noticed that in spite of its size the giant D.F.W. was to be fitted with a monoplane tail.

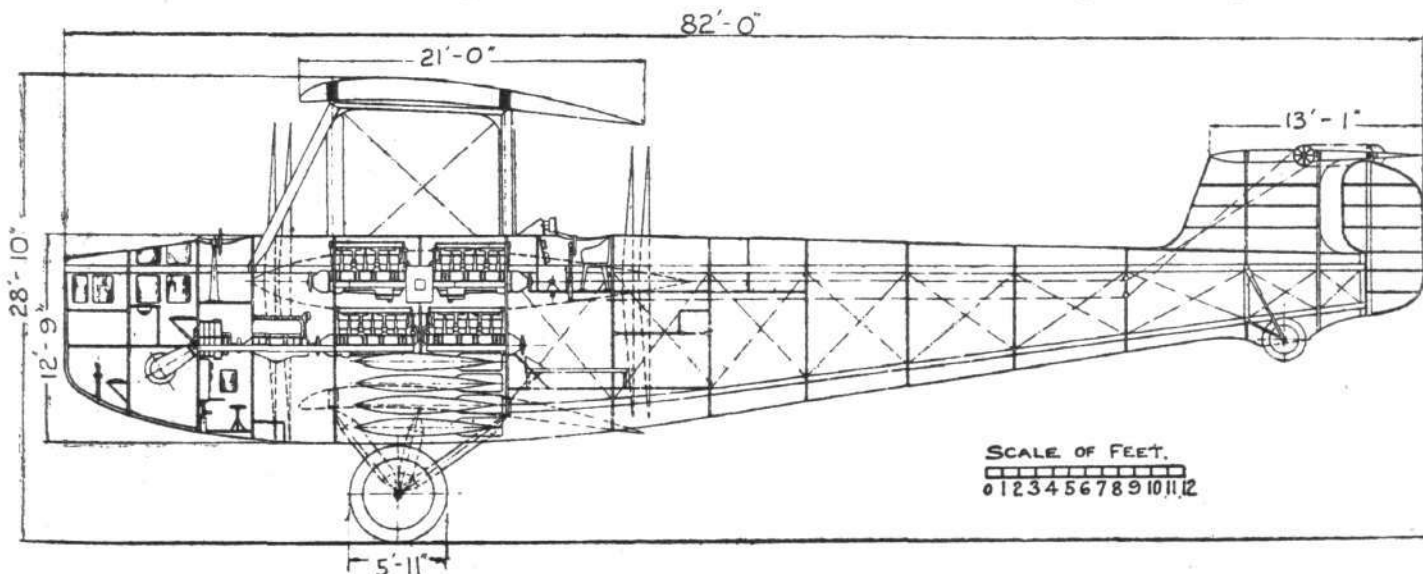
The D.F.W. Passenger Carrier

As in the case of the military machine, the passenger carrier has a fuselage built entirely of wood. There are four main longerons, to which transverse formers are attached at intervals. In places there are incorporated in the construction steel tube struts and wire bracing. The floor-boards, gangways, etc., are so designed as to assist in rendering the fuselage structure rigid. Special attention has been paid to the engine installation. The engines are mounted on a structure of pressed steel inside the fuselage, two on each side, one slightly ahead of and above the other. The points where the members of this pressed steel framework are secured to the fuselage also serve as attachments for wings and undercarriage struts. The whole fuselage is covered with plywood. The front and rear portions of the body provide accommodation for the passengers, while the central portion is the engine-room. In each of the passenger cabins there are twelve seats, so arranged as to give the occupants a good view out through the numerous windows with which the cabins are provided. Electric lighting and heating are provided, and a wireless outfit is carried. Fire extinguishers are placed at suitable points throughout the fuselage, and all modern conveniences are provided.

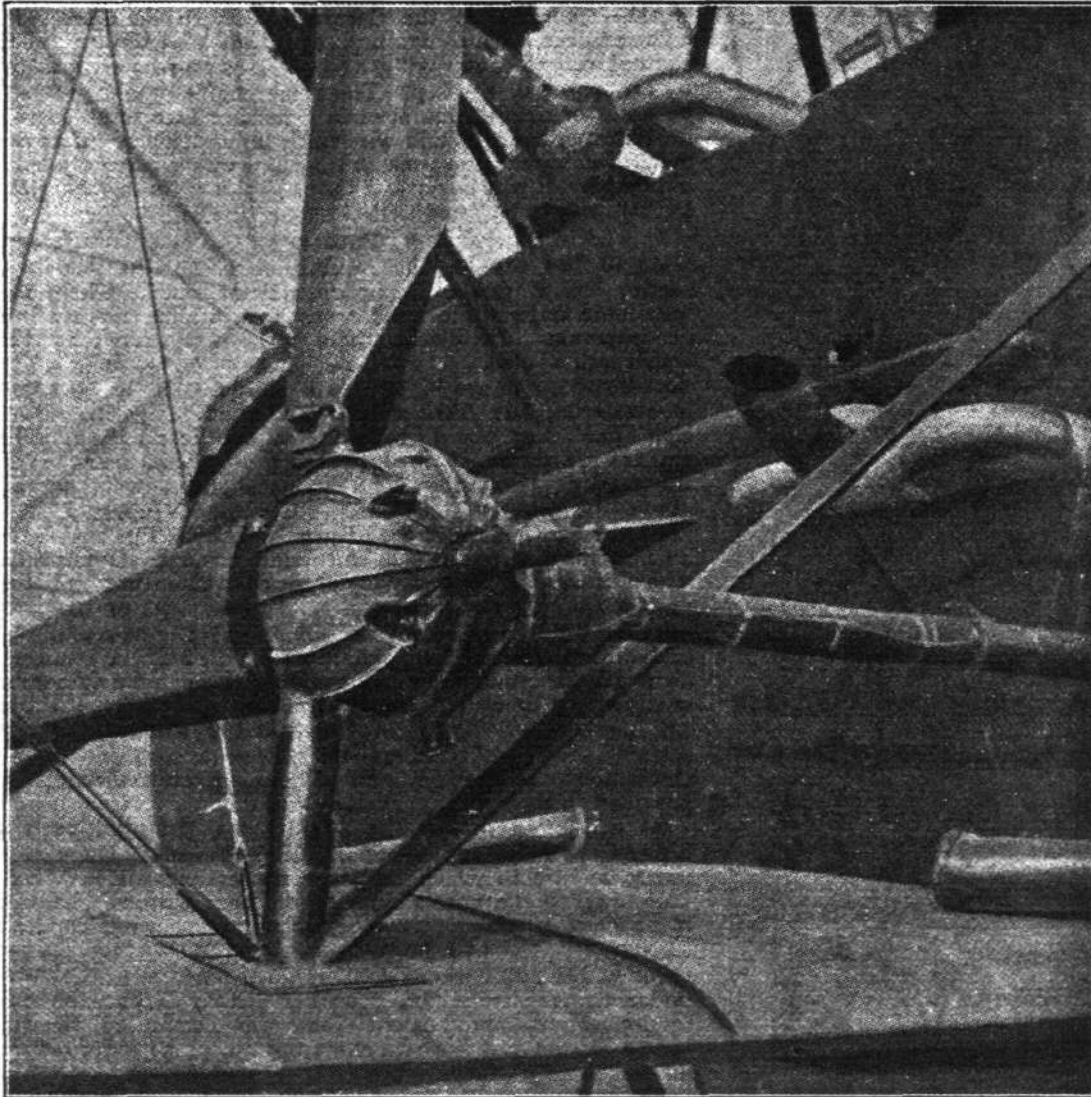
As will be seen from the illustrations, the machine is a biplane, with its top plane in three sections. There is a centre section to which the two end sections are attached. The lower plane consists really of four sections, the two inner ones of which, however, remain in place. The end sections are joined to the two short wing roots of the bottom plane at the point where occur the attachments of the outer undercarriage struts and propeller struts. When the end sections of top and bottom planes are dismantled, the top centre section and the two short bottom plane roots remain in place, with their strutting, propeller drives, etc. The wing construction is of more or less standard form, with spars and ribs of wood, built-up sections being glued with waterproof glue. The wing bracing is in the form of duplicate steel cables. Ailerons are fitted to the top plane only.

The tail, it will be seen, is of the biplane type. The vertical fin is built integral with the fuselage and is covered with plywood. The two tail planes are attached to the fin and to the fuselage respectively. The bracing is by struts and cables as in the case of the main planes. The elevators are mounted on ball bearings at the rear edge of the tail planes, and the rudders are attached to the rear inter-tail plane struts. The elevator and rudder control cables pass inside the body through suitable guides, while the aileron cables pass over pulleys in the lower plane, and hence to the controls.

The arrangement of the undercarriage will be understood from an inspection of the general arrangement drawings.



A D.F.W. design for a giant aeroplane to be driven by eight engines, each of 270 h.p. Owing to the finish of the War this machine was never built.



The D.F.W. Military Type R II. : The port pusher airscrew shaft, above the rear spar of the bottom plane.

There is an undercarriage on each side, consisting of two Vees of streamline steel tubes, the inner one of which is attached to the fuselage, while the outer one is bolted to the bottom plane. The two Vees are braced diagonally by steel cables. The axles are of chrome nickel steel, slung from the apices of the Vees by rubber cord, and rest in a slot in a plywood fairing. In order to prevent the machine from turning on its nose on landing, a front undercarriage is fitted towards the nose of the fuselage. A swivelling tail skid is mounted direct in the rear part of the body.

As already mentioned, the motors are placed inside the fuselage, above one another, and it is said that as a result of keeping the whole central portion of body and wings a complete unit, this part of the structure is very rigid, and that as a consequence no transmission troubles are experienced. As will be seen from the side elevation, the upper engines have their gear end facing forward, while the lower engines are placed the reverse way. The two front engines drive airscrews placed on the front spars of the top plane, while the lower engines drive pushers situated near the rear spars of the lower plane. Consequently the engine shafts and propeller shafts are parallel with one another, and the drive is by sloping shafts and bevel gears. The size of the bevel gears is so proportioned that a gear reduction of 14 to 9

is obtained. That is to say, when the engines are making 1,400 r.p.m. the airscrews are revolving at 900 r.p.m. It is claimed that by placing the tractors high and the pushers low as indicated, both are working in undisturbed air, and that this fact, in conjunction with the slow running of the airscrews' 900 r.p.m., makes for very high airscrew efficiency. It is also claimed that in case of one engine cutting out the trim can be maintained by use of rudder and elevators. As the distance between airscrews is fairly great, this claim might be open to doubt. It is said that the machine will fly comfortably with only two engines running, and while this is probably true as regards the actual power, it may be doubted in view of the points of application of the power. In other words, if the trim of the machine is right with all engines working, it is doubtful whether it would be with, for instance, only the tractors pulling, as the centre of thrust would be in that case very much too high. As naturally the transmission bearings are subject to considerable loads, it is important to be in a position to know always what is their condition. To this end all the bearings in the transmission system are provided with electric thermometers which indicate at any time the temperature of each bearing. There are seven petrol tanks placed in the body, each holding 350 litres.

□ □ **Germans Want International Air-Post**

NEGOTIATIONS are being carried on between German and foreign firms with the object of securing Germany's participation in an international air-post service.

Regular air-mails between Berlin and Copenhagen are expected to begin shortly, and arrangements are being made with the other Scandinavian countries. An important part of the service will be the conveyance of "aerograms" to relieve the telegraphic service.

The shortage of petrol in Germany at present is restricting the use of aircraft for mail purposes.

□ □ **Germans and Transatlantic Flying**

FROM messages sent out from Berlin it appears that a new International Aerial Traffic Co. is being planned to carry on aerial communication between Germany and neutral

and other States, including America. It is suggested that the journey between Europe and America may be reduced to 48 hours by utilising a reconstructed and altered type of the Hungarian rigid steel airship, with a carrying capacity of about 45 tons and "with increased firmness, speed and running security." This new construction is said to consist of a system of curved steel pipes, designed to give the airship greater strength.

□ □ **Zeppelin Services to Italy**

THE municipal authorities of Locarno have received a proposition from a Swiss firm which wishes to establish an aerodrome in the Maggia delta, with a view to running a service of Zeppelins between Germany and Italy, across Switzerland. A committee has been appointed to go into the matter.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

SPECIAL COMMITTEE MEETING

A SPECIAL MEETING of The Committee was held on Wednesday, September 17, 1919, when there were present:—Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., in the Chair; Mr. G. B. Cockburn; Lieut.-Col. Spenser D. A. Grey, D.S.O.; Lieut.-Col. F. K. McClean; Lieut.-Col. Alec Ogilvie, and the Secretary and Assistant Secretary.

Jacques Schneider International Seaplane Race.—The report of the Commissaires Sportifs was received and telegram from Mr. Lorenzo Santoni, President, Societa Idrovantanti Alta Italia, lodging protest on behalf of the "Savoia."

The Secretary reported that Mr. Santoni had also requested the Aero Club of Italy to lodge formal protest with the Fédération Aéronautique Internationale, Paris.

Organisation of the Race.—Letter from Lieut.-Col. Spenser D. A. Grey, D.S.O., dated September 15, 1919, on the Club's organisation of the Race was read.

The organisation of the Race was discussed at great length and the Committee considered that the arrangements were faulty.

The Committee further considered the method of carrying out future competitions.

SPECIAL COMMITTEE MEETING

A Special Meeting of The Committee was held on Monday, September 22, 1919, when there were present:—Mr. G. B. Cockburn, in the Chair; Lieut.-Col. Spenser D. A. Grey, D.S.O.; Sqdn.Ldr. T. O'B. Hubbard, M.C. R.A.F.; Lieut.-Col. F. K. McClean; Lieut.-Col. Alec Ogilvie, and the Secretary and Assistant Secretary.

Jacques Schneider Trophy.—It was reported that the Aero Club of Italy had lodged a protest with the Fédération Aéronautique Internationale against the disqualification of Sr. Janello, the Italian representative, on the "Savoia," in the recent race at Bournemouth for the Jacques Schneider Trophy.

The Committee unanimously decided that although Sr. Janello did not actually complete the course as marked out for the race, the Royal Aero Club, as the holders of the Trophy,

should recommend to the Fédération Aéronautique Internationale when the protest is heard, that the Trophy and Prize should be awarded to Sr. Janello, the Italian representative.

Royal Aero Club Seaplane Competition.—It was further decided that the Royal Aero Club should offer a Prize of £500 and Trophy, valued at £100 (kindly presented to the Club by Lieut.-Col. F. K. McClean) for an International Seaplane Competition to be held in the Solent and Southampton Water in the last week in October next. The conditions will be similar to those of the Schneider Race, with the exception that the alightings on the water will be made after the course of 200 nautical miles has been completed.

The final regulations are now being drawn up and will be issued on October 1.

Intending competitors are requested to communicate with the Royal Aero Club.

TECHNICAL AND COMPETITIONS COMMITTEE

A Meeting of the Technical and Competitions Committee was held on Monday, September 22, 1919, when there were present:—Lieut.-Col. F. K. McClean, in the Chair; Sqdn. Ldr. T. O'B. Hubbard, M.C., R.A.F.; Maj. R. H. Mayo; Lieut.-Col. Alec Ogilvie; Lieut.-Col. H. T. Tizard, Mr. Howard T. Wright and the Secretary and Assistant Secretary.

Royal Aero Club Seaplane Competition.—The conditions for this Competition were considered, and the Committee adjourned till Tuesday, the 30th inst.

Presentation to Club

Mr. Hugh Lewis has presented to the Club a large framed coloured picture of Squadron 32 (D.H. 2 Scouts) Royal Flying Corps at Vert Galland Farm, France, Somme Battle 1916.

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

CORRESPONDENCE

SCHNEIDER CUP CONTEST

[1981] With reference to your account of the Schneider Cup contest in your issue of September 18, I write to request that you will correct the impression created on page 1249 that the Sopwith-Jupiter machine gave up the race partly on account of engine trouble.

The machine is fitted with the 450 h.p. radial air-cooled "Jupiter" engine built by this company, and its running was entirely satisfactory in every way. I spoke to Mr. Hawker a few minutes after his giving up the race and was glad to learn that the engine was running perfectly, the mist only making it impossible to find the way round the course.

THE COSMOS ENGINEERING CO., LTD.,
T. D. WYNN WESTON, Sales Manager.

[It was not in any way in our mind that the engine was at fault. Our reference was merely an attempt to describe the usual happenings when a pilot is switching on and off during his work in the air.—Ed.]

[1982] The wording of your report on the eliminating trials for the Schneider Cup competition would imply that the photograph sent by us to you of the actual machine was not that of the actual racer, but one that we had sent with a view to concealing the features of the machine entered.

If you will refer to a contemporary you will see the same photograph that you published together with the true facts

of the case stated, i.e., that the machine had two pairs of wings, the choice of which for the actual race depended on the weather conditions at the time.

It has been our consistent policy not to publish particulars or details of our modern machines, but we think it would have been more courteous to have applied to us for the true facts before implying that we were guilty of misrepresentation and, had you done so, you would have been given the same information as was accorded to other journals.

THE FAIREY AVIATION CO., LTD.,
A. A. AMOS, Secretary.

[In our remarks upon the Fairey machine, we naturally could only deal with facts as obtainable and as before us. It was hardly possible that we could assume there were two sets of wings to be used for different conditions obtaining at the moment of the race. We did communicate with the Fairey Co. for full particulars of their entered machine, and when sending us the photograph which we published on page 1182, Sept. 4, no word was mentioned as to the dual set of wings. From our own observations and photographs obtained at Cowes we still had no means of knowing of the dual wing arrangements, and it is obvious from a glance at the two photographs that our remarks are the only natural conclusion to arrive at in the circumstances. We hardly, therefore, understand how it is we were "given the same information as was accorded to other journals."—Ed.]

Cairo-Karachi Air Post

It is understood that owing to the lack of commercial prospects sufficient to justify the great expense, it has been found necessary to postpone the inauguration of the Cairo-Karachi air-mail service, reports the *Times* correspondent from Baghdad.

A survey party recently crossed the desert from Damascus

in cars to Abu Kemal, on the Euphrates, and thence to Baghdad, and marked landing grounds at intervals of 20 miles in the desert.

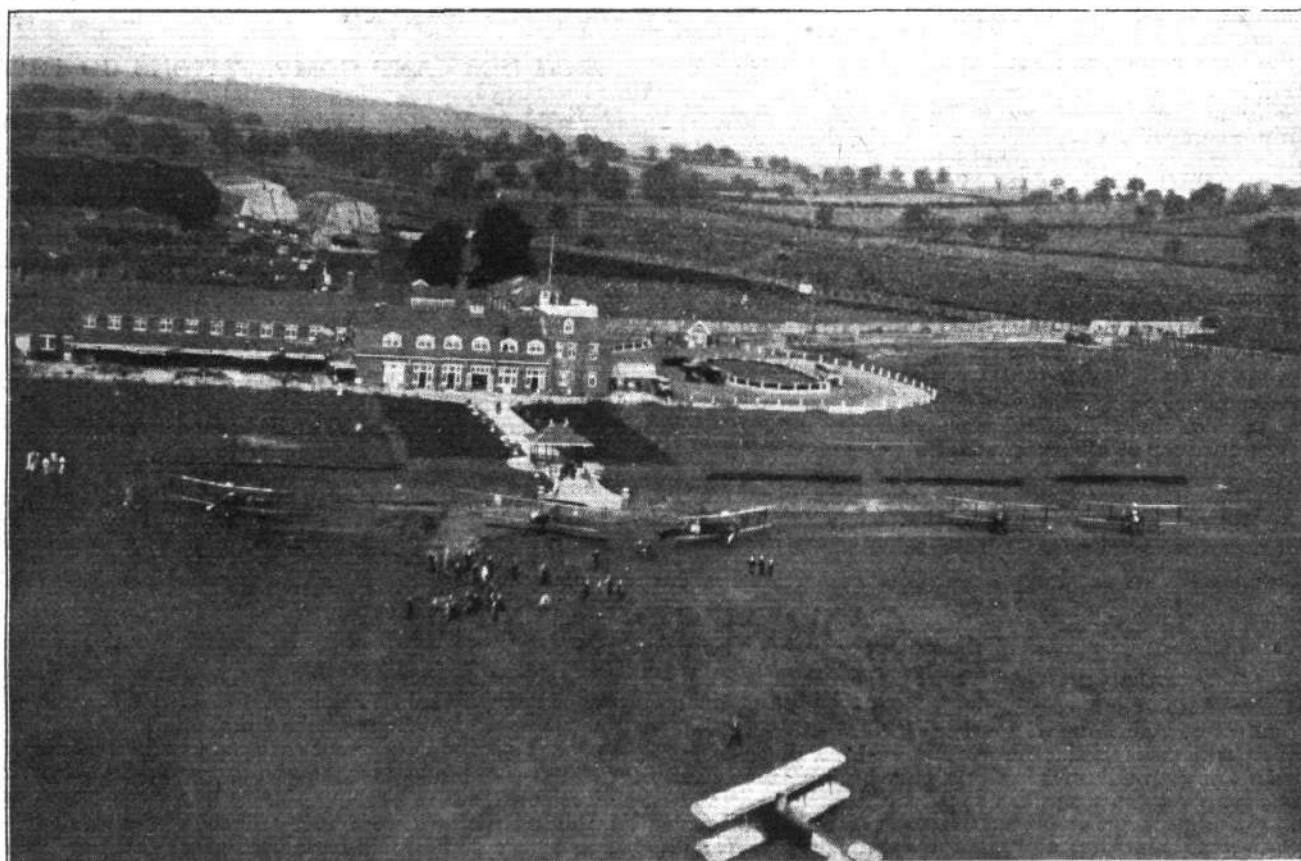
Fatal Accident in India

An aeroplane, while trying to land at the Residency at Quetta, crashed to the ground and burst into flames. A passenger, Capt. Steele, and two Brahmins were killed.

THE LONDON FLYING CLUB, HENDON

RECENTLY, following a visit to the L.F.C., we gave an outline of the remarkable transformation which has been brought about at one of the corners of the Hendon Aerodrome, by the erection of a really up-to-date flying and country club-house, by Mr. Claude Grahame-White and those associated with him. Last week at an informal gathering of the Press and friends, the Club was inaugurated at a luncheon at which Lord Louth presided, in the unavoidable absence of the chairman of the Club, Lord Lonsdale. The beauties and possibilities of this, London's latest attraction, were greatly appreciated by the guests, and whilst tennis and other sports were in full swing, the visitors had opportunities of enjoying flights in the Club aeroplanes which were ranged in the Club 'drome in front of the members' terrace. Some photographs, which we are able to give this week, will convey in a small way the actualities of the Club and its "accessories." So far as possible, the idea has been to follow the lines of country clubs as run in America.

now that Prince's is to be transformed into a central motor car depot and garage. It might not be known, but they even had a trout stream on the premises and a club golf course was now in process of being laid out on the other side of the railway. A great advantage was that Club aeroplanes were always ready on the spot for hire by members, either with pilots or in the case of pilot members, without the professional aid. Those who desired to learn would also have special advantages, while the Club was brought practically to the doors of members by means of the fleet of Club cars—from the genuine Rolls-Royce to the 8d. per mile Club taxis—which were always ready for short or long distances. To Mr. Matthew was due, Mr. Grahame-White said, the credit of the architectural work, and for the harmony and scheme of colour throughout the furnishings and decorations he wished to give full credit to Mrs. Grahame-White (Miss Ethel Levey). The secretarial chair was occupied by Maj. Oliphant, late of the 12th Lancers, who was enthusiastic in his support



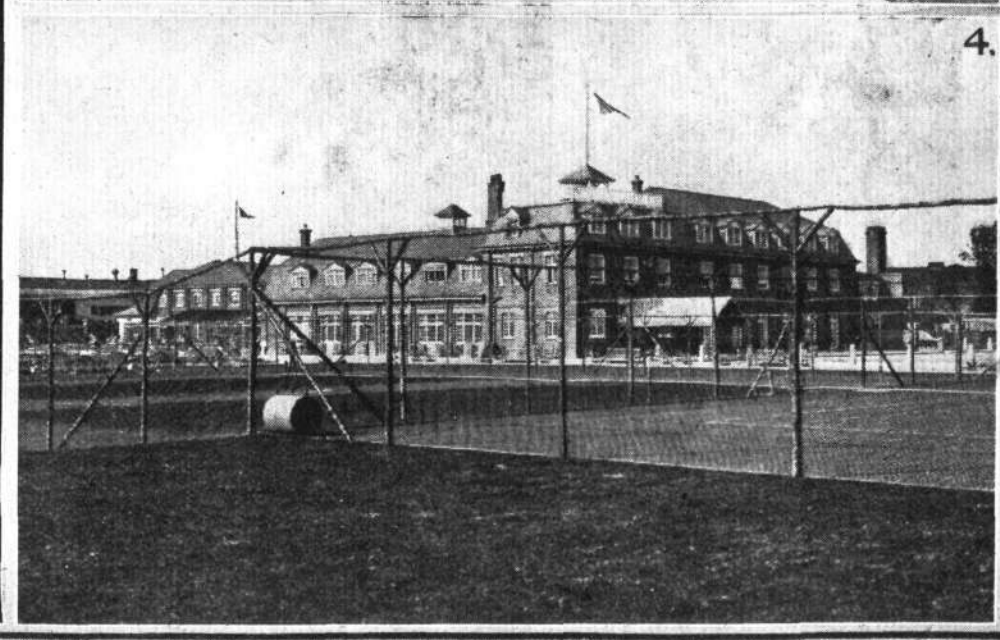
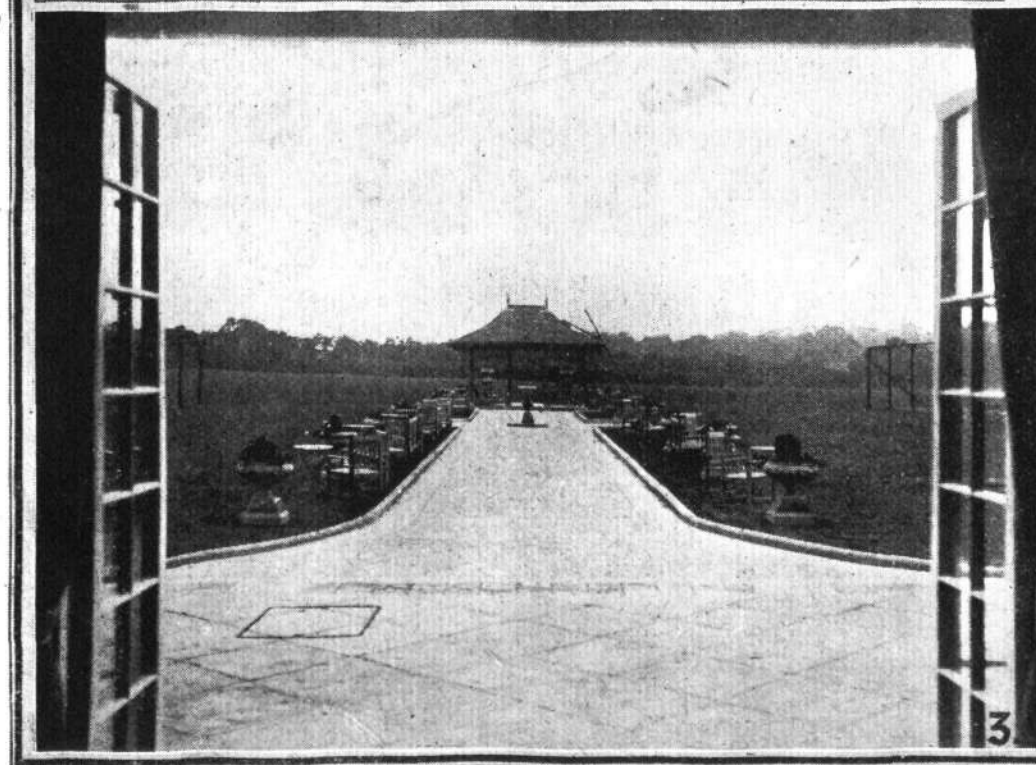
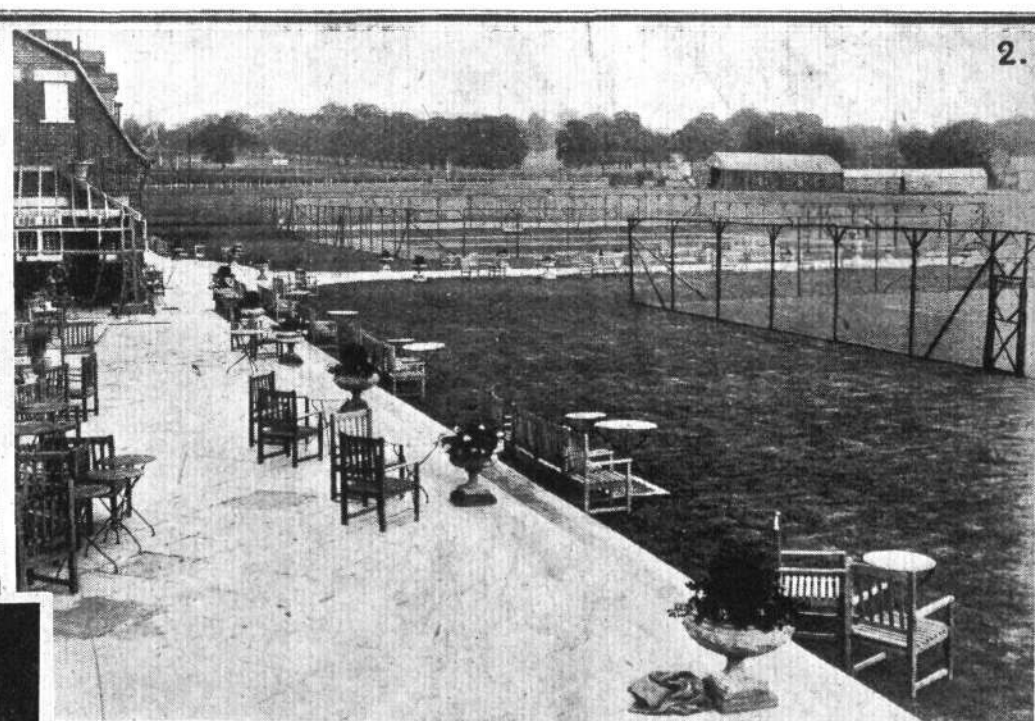
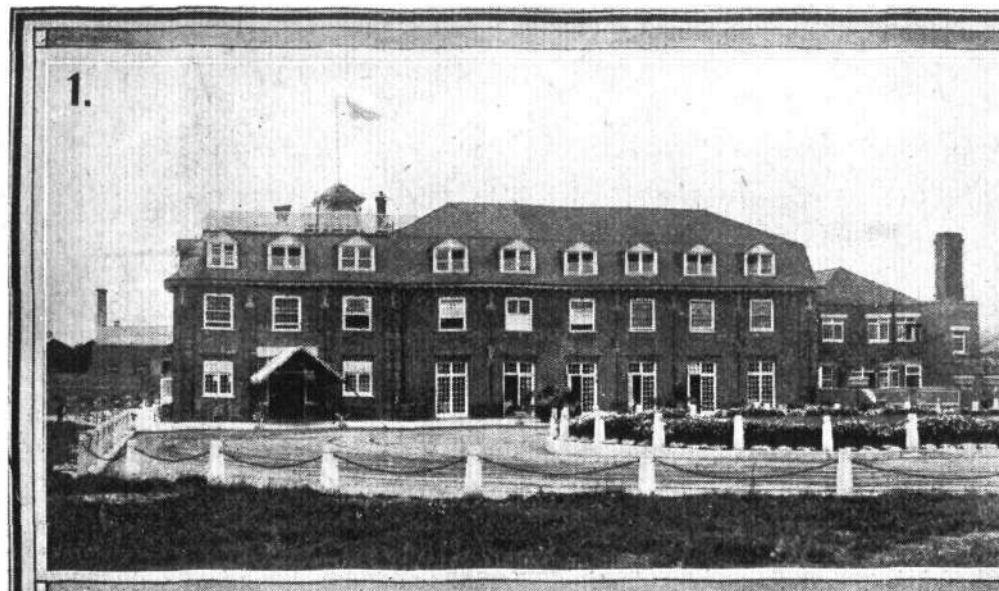
"Flight" Copyright.

THE LONDON FLYING CLUB, HENDON : A view of the Club-house from above, showing the Club aeroplanes ready for members at the end of the terrace dividing the hard tennis courts.

At the opening gathering, Mr. Grahame-White explained that the first idea of the Club occurred to him in 1909, and with the coming of the Armistice, and having regard to the thousands of skilled pilots who had graduated during the War, and the enormously increased field of interest in aviation which had arisen, the time was ripe to bring his dream into materialistic fact. The London Flying Club, he believed, would be but the forerunner of similar clubs all over the country, even the world, and by their all keeping in association and touch with each other, a chain of club-houses and aerodromes would come into being which would greatly help the forward movement of aeronautics. It was not the flying man only for which the L.F.C. and the other clubs would cater, but his aim was to found rather a super sports club, a Ranelagh-Hurlingham-Stoke Poges centre of sport and society. A great feature was the arrangements for both summer and winter sports and entertainments, and they had in contemplation the adding of covered tennis courts, croquet, polo, a real ice-rink—the latter being particularly called for

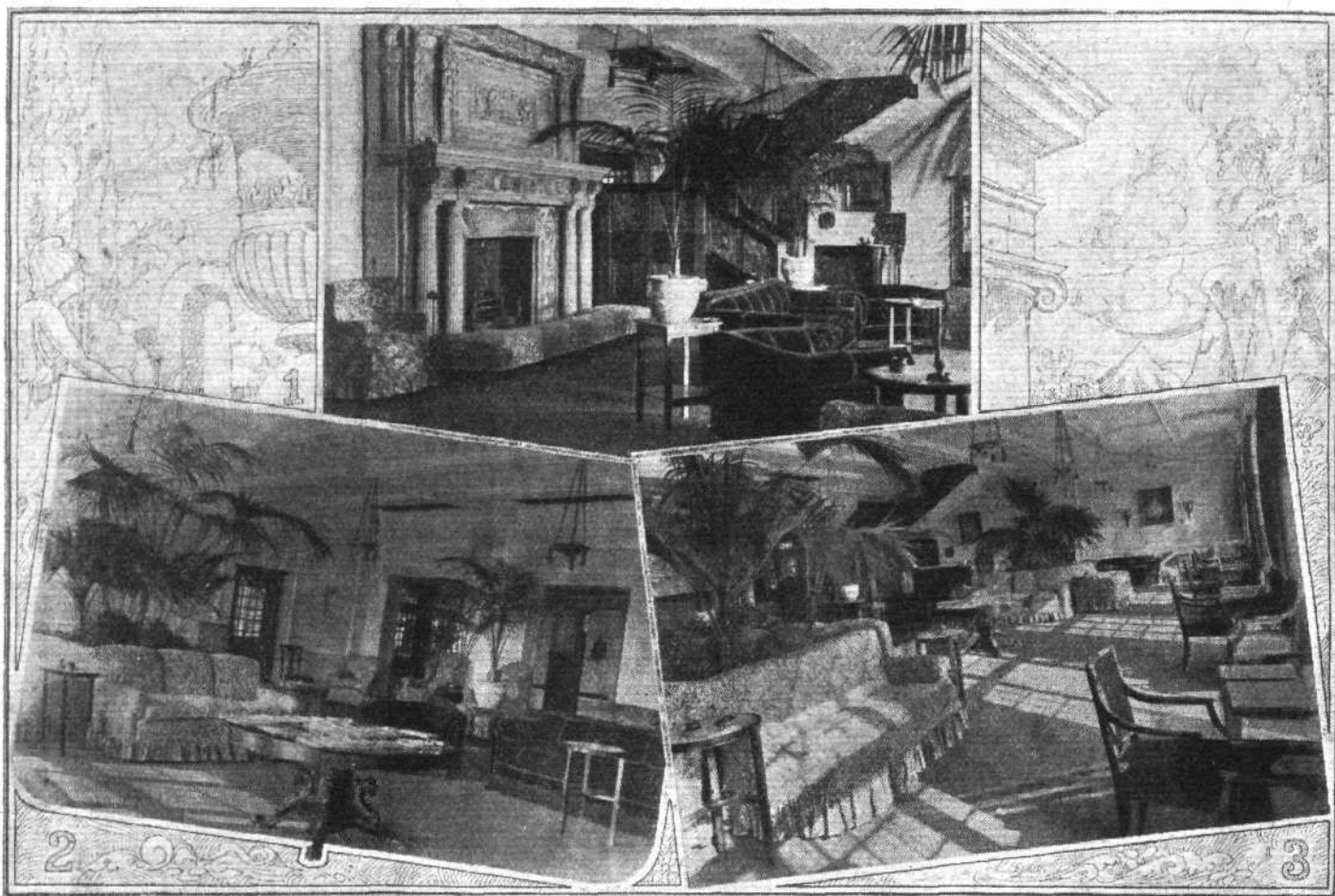
of the whole undertaking as a sports and social centre of meeting.

That the Club should attract an influential membership is a foregone conclusion, and by way of an official inauguration, Monday last was selected for an open lawn tennis tournament, lasting the entire week, a number of valuable prizes being put up for competition in gentlemen's open singles, ladies' open singles, open doubles for each sex and open doubles for ladies and gentlemen. A special committee had charge of the tennis section of the Club, with Mr. D. R. Larcombe as referee. The Vice-Presidents of the Club are :— Lord Willoughby de Broke, Mrs. Ian Bullough, the Marquis of Cholmondeley, Mrs. Winston Churchill, Viscountess Cowdray, Sir Arthur du Cros, Bt., Lady Cunard, Viscount Curzon, Lord D'Abernon, Lady D'Abernon, the Countess of Drogheda, Sir Alfred Fripp, K.C.V.O., Lieut.-Col. Cecil Grenfell, Mr. C. Grahame-White, Mrs. Claude Grahame-White, the Hon. Sir Sidney Greville, K.C.V.O., C.B., the Hon. Mrs. Lionel Guest, Princess Hatzfeldt, Lieut.-Gen. Sir David Henderson,



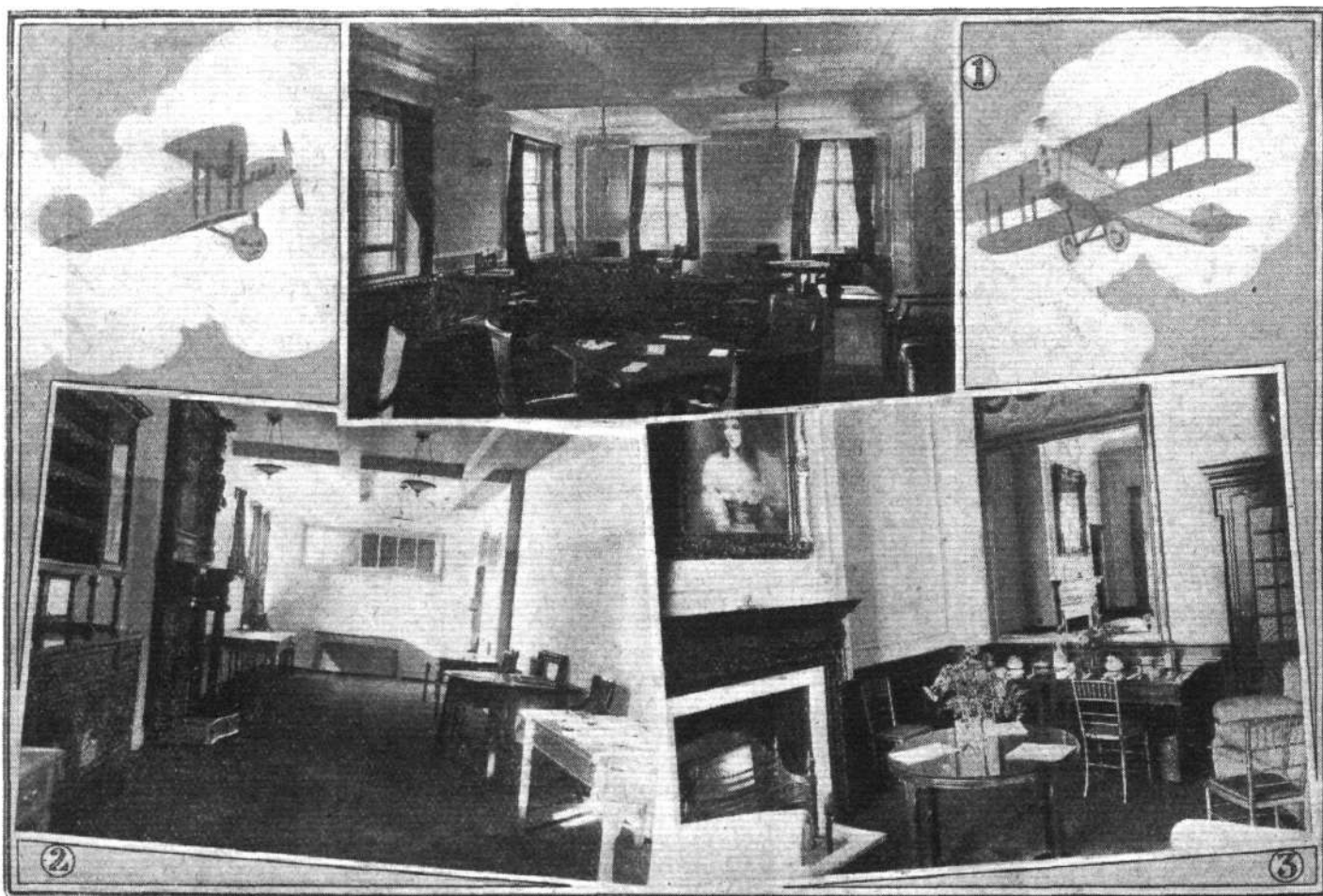
THE LONDON FLYING CLUB, HENDON: A view of the Club-house, the terrace facing the Club aerodrome, the "gangway" to the aerodrome pavilion between the hard tennis courts, as seen from one of the windows of the Salon, and the hard tennis courts.

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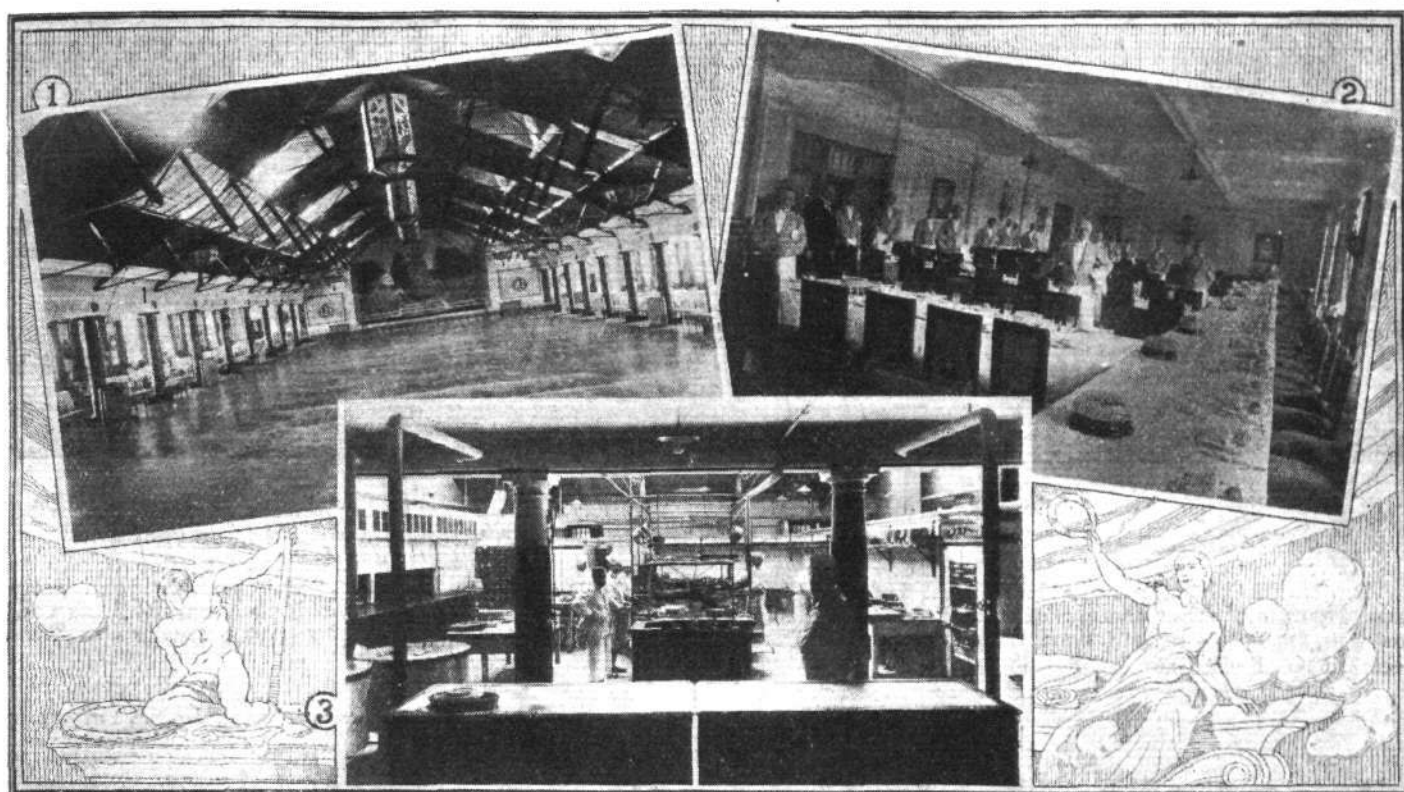
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THE LONDON FLYING CLUB, HENDON: The main salon of the Club, and above, the massive fire-place which adorns this handsome room.

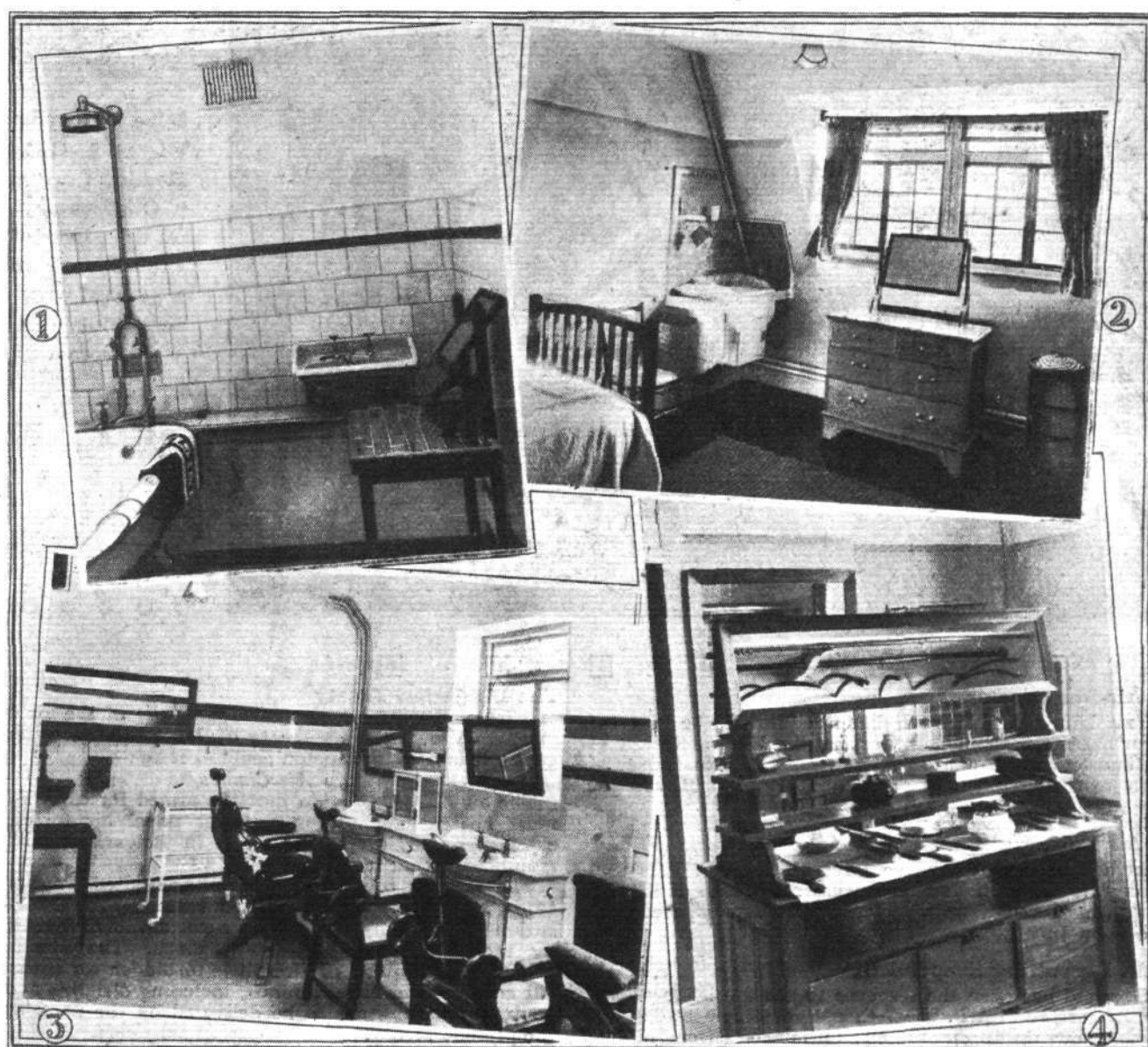


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THE LONDON FLYING CLUB, HENDON: Views of the writing room, the library and ladies' boudoir.



THE LONDON FLYING CLUB, HENDON : The ball-room, the dining-room, and below, the kitchen.



THE LONDON FLYING CLUB, HENDON : An example of the bath-rooms, the bedrooms and the hairdressers' room and ladies' dressing-room.

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THE LONDON FLYING CLUB, HENDON: Machines in the Club 'drome, busy taking up visitors.

K.C.B., K.C.V.O., D.S.O., the Hon. Mrs. Henley, Muriel Lady Helmsley, the Countess of Limerick, Lord Lough, Lord Lurgan, Princesse de Monaco, Lady O'Hagan, Sir Milsom Rees, C.V.O., Lady Rees, Lord Ribblesdale, Maj.-Gen. Ruck,

C.B., the Duke of Rutland, K.G., Maj.Gen. Sir John Seely, C.B., D.S.O., Admiral Sir Edward Seymour, G.C.B., Lady Tree, Mrs. Hall Walker, Lord Weir, the Duchess of Westminster, Mrs. Hwfa Williams.



The London Flying Club, Hendon: The "Observatory" on the top of the Club-house with a general view of the Club aerodrome.

The Air-Port Doctor

THE Ministry of Health have requested the Heston-Isleworth District Council to appoint the Medical Officer of the Hounslow Aerodrome as an assistant Medical Officer of Health for the district for air-port sanitary services, without salary from the local authority.

The Air Ministry Staff

IN a return issued in the form of a White Paper on Saturday, it is shown that on August 1 the staff of the Air Ministry numbered 3,229, a decrease of 25, as compared with the total on July 1.

R.A.F. Recruiting Suspended

So rapid has been the response to the special recruiting campaign of the R.A.F. that, except for a few trades, the Force is now up to its present authorised strength, and recruiting has had to be suspended for the present. There are a few vacancies for carpenters, cooks, and clerks, and those who wish to get into the Force now should apply at once.

The Bulgarian Treaty

THE following is the official summary of the air clauses in Part IV of the draft Treaty of Peace handed to the Bulgarian delegates in Paris on September 19:—

Air Clauses

The air clauses provide that the armed forces of Bulgaria must not include any military or naval air forces. The entire *personnel* of the air forces in Bulgaria is to be demobilised within two months.

The aircraft of the Allied and Associated Powers is to enjoy full liberty of passage and landing over and in Bulgarian territory until the complete evacuation of that territory by the Allied and Associated troops. The manufacture of aircraft and parts of aircraft is forbidden for six months. All military and naval aircraft, including dirigible and aeronautical material, are to be delivered on the ratification of the present Treaty.

Part X of the Treaty, dealing with air navigation, is identical with that in the Austrian Treaty given in *FLIGHT* of June 5, 1919.

THE CENTRAL AIRCRAFT CO.'S 9-SEATER BIPLANE

Two 160-h.p. Beardmore Engines

IN our issue of March 6, 1919, we referred briefly to a twin-engined passenger carrier which the Central Aircraft Co., Ltd., of 179, High Road, Kilburn, then had in contemplation. This machine is now an accomplished fact, having passed her initial tests at the Northolt aerodrome of this firm. In the issue referred to an illustration was published

built, the radiators are placed behind the engines, which at present are left uncovered. Another respect in which the actual machine differs from the original design is in the matter of passenger accommodation. The intention was to provide a cabin for the passengers, while the pilots were to be in an ordinary open cockpit. In the first machine



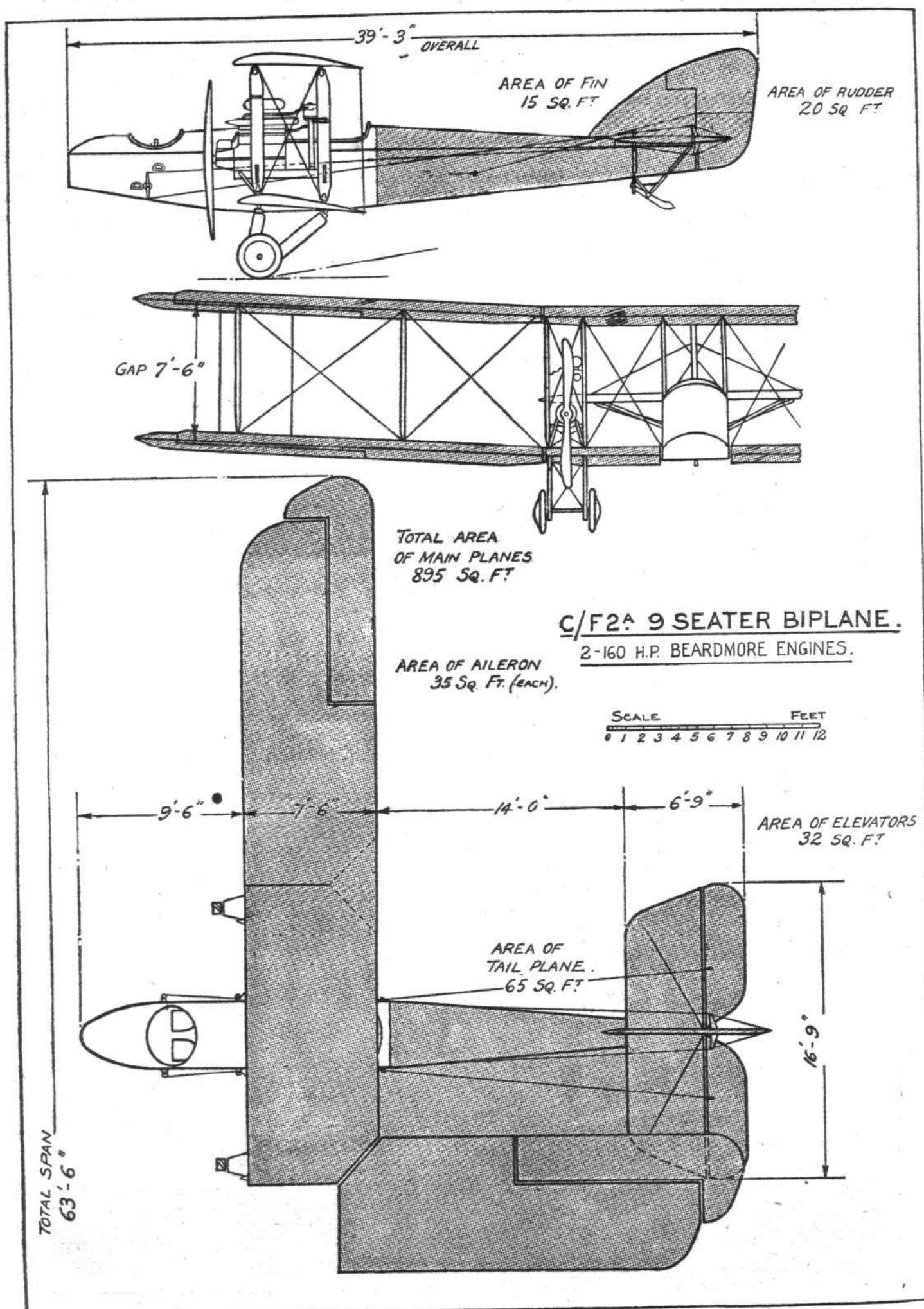
THE CENTRAL AIRCRAFT CO.'S 9-SEATER: Three-quarter front view

showing the machine as she would appear in flight. A comparison between this illustration and the photographs and drawings published herewith will show that some minor alterations from the original design have been made. Thus it was originally intended to enclose the engines and to place the radiators in the nose of the engine nacelles. As actually

built, however, the cabin has been omitted, the passengers sitting in two open cockpits. There are two ways of designing an aeroplane—as there are of doing many other things—one is to design the machine as an aeroplane first and to add the desired amount of refinement afterwards. This is the plan followed by Mr. "Tony" Fletcher,



THE CENTRAL AIRCRAFT CO.'S 9-SEATER: Side view



THE CENTRAL AIRCRAFT CO.'S 9-SEATER BIPLANE: Plan, side and front elevations, to scale



THE CENTRAL AIRCRAFT CO.'S 9-SEATER: Three-quarter rear view

chief designer of the Central Aircraft Co. The other is to design the upholstery first and then to build the machine around it.

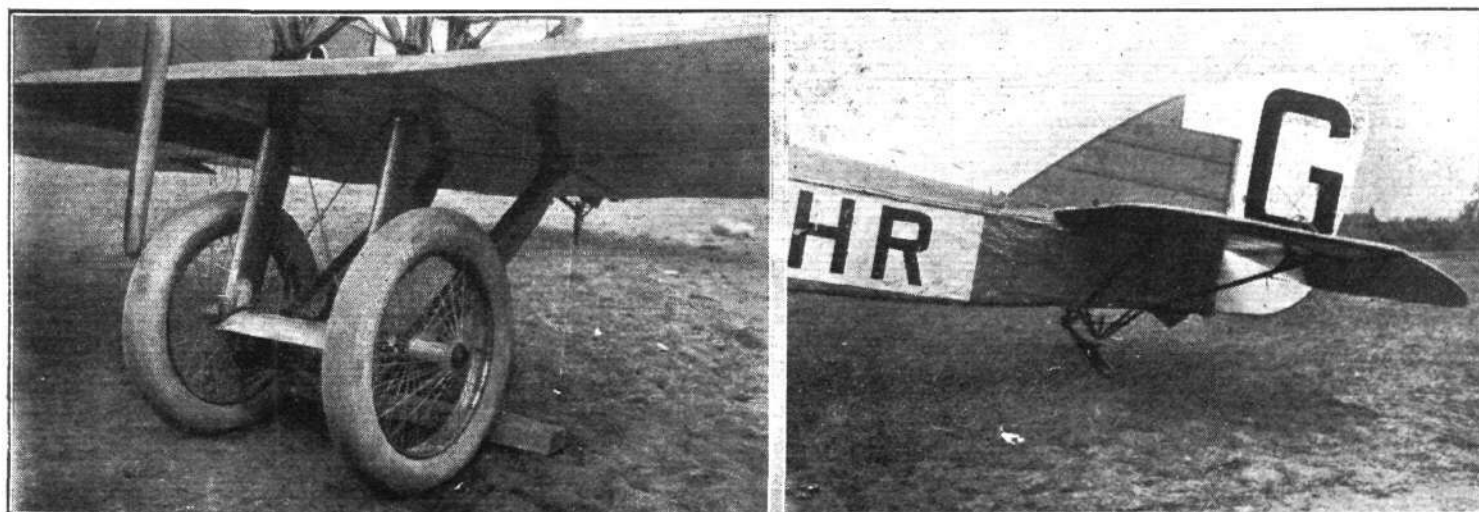
By keeping everything simple the initial expense of the first experimental machine—and in spite of our considerable knowledge of the subject, experimental machines are not yet entirely superfluous—is kept down to a reasonable figure, while quite as much can be learned from such a simplified aeroplane as from the highly-finished article. Having then by experiment and experience discovered the aerodynamic and structural qualities, it is time enough to commence thinking about the upholstery. This is, we believe, approximately the reasoning which has led the Central Aircraft Co. to keep their first twin-engined machine as simple as possible, and as the accompanying illustration will testify, the procedure has by no means spoilt the lines, which, as a matter of fact, are very pleasing to the eye. Bearing in mind, then, that the machine is an experimental one, and judging it from this point of view, we may proceed to an examination of its various features.

Generally speaking, the C/F 2A, which is the series number of the machine, is an ordinary *fuselage* biplane with the engines placed on the wings. In general arrangement standard practice is followed, and the machine is, in fact, a straightforward, commonsense production, designed to be built at reasonable cost, and of sturdy construction to withstand

hard wear. If there is anything unusual about the design it is mainly a matter of aerodynamic efficiency, which will allow a good load to be carried with a reasonably low engine power—320 h.p. to carry nine people, including the pilot, at 90 m.p.h.—must be considered fairly good economy as aeroplane transport goes.

The *fuselage* is constructed, as regards its front portion, of four *longerons* cross-braced with X struts of wood and covered with three-ply wood. The rear part, from the cockpit to the stern, also has four *longerons*, but is cross-braced by vertical and horizontal struts and bracing wire. The two top *longerons* run straight through, forming an excellent datum line for trueing up the *fuselage*. The three-ply covering of the front part of the body is extremely neatly done, especially the nose. A trap door in the floor of the *fuselage* gives access to the back of the instrument board, while the pilots' cockpit is reached *via* steps mounted on a tube suspended from the body. When the machine is in flight these steps are drawn up, the tube lying along the bottom with the steps projecting through slots in the floor. The two pilots are seated side by side and dual controls are provided. The rudder controls are in the form of foot bars, while elevator and aileron controls are by wheel mounted on a tubular column. All the usual instruments are fitted.

Immediately behind the pilots' cockpit, separated from it by a bulkhead, is the petrol tank, which has

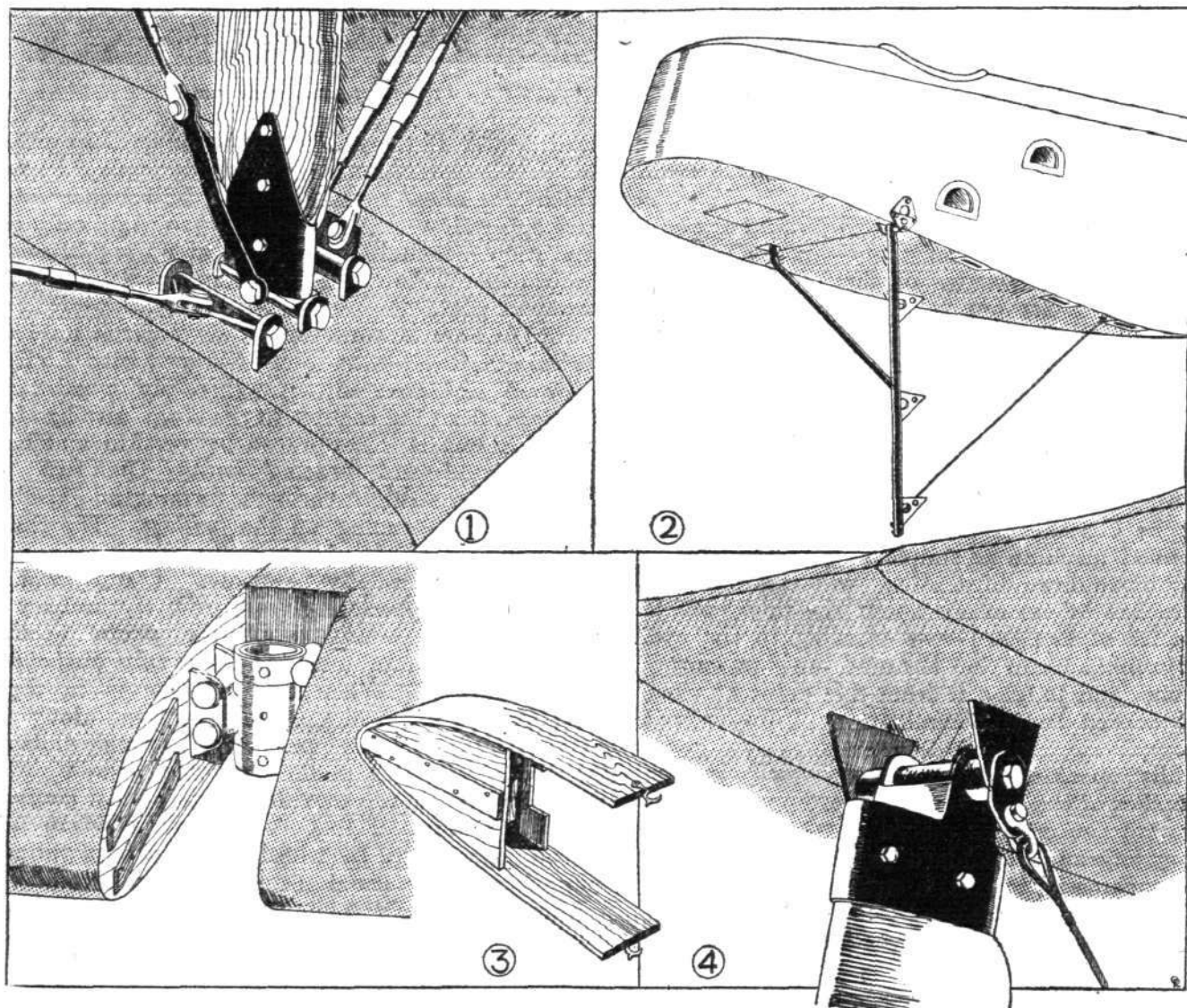


THE CENTRAL AIRCRAFT CO.'S 9-SEATER: On the left, one of the undercarriages; on the right, view of the tail and tail skid

a capacity of about 50 gallons, or sufficient for a flight of two hours at full throttle or two and a-half to three hours when flying throttled down. The oil tanks are mounted above the engines on the inter-plane engine struts.

Behind the petrol tank are the passengers' cockpits, or, rather, there is one cockpit divided by a horizontal strut in the top of the body. The front part of this cockpit accommodates four passengers, each sitting in a corner, so that two face forward and two face aft. The rear portion of the cockpit seats three passengers, two facing forward and one facing aft. Just at present the seats are not over-

in slots in the inter-plane engine struts. The whole structure is well cross-braced and gives an impression of great strength. It was originally intended to have the engines cowled in and to place the radiators in the nose of the engine nacelles, but the present machine has the radiators placed between the rear pair of engine struts, and no cowling is fitted. Cowls may still be fitted if desired, as the exhaust collectors could be passed out through the openings left for this purpose in the radiators. In that case louvres in the cowls would have to be provided. Two instruments are fitted direct on the engine bearers and are placed at a slight angle, so as to be more easily



SOME CONSTRUCTIONAL DETAILS OF THE CENTRAL AIRCRAFT CO.'S 9-SEATER:
 1. The hinged interplane strut attachment. 2. Access to the two front seats is by means of steps secured to a tube which is drawn up during flight. The three steps then rest in slots in the floor of the fuselage. 3. The spar joints are of the hinge type as the wings are made to fold back. Access to the joint in the front spars is by means of the easily removable section of the leading edge shown on the right-hand side of the sketch. 4. The attachment of the undercarriage struts to the bottom spar

comfortable, but it should be pointed out that the arrangement is a temporary one, and that when a cabin is fitted the seating arrangements will be given further consideration.

The main planes, which consist of straight centre sections and end sections set at a dihedral angle of 4 deg., have a span of 63 ft. 6 ins. and a chord and gap of 7 ft. 6 ins. There is no stagger. As already mentioned, the engines—160 h.p. Beardmore's—are mounted between the planes. The ash engine bearers are carried on stout transverse beams resting

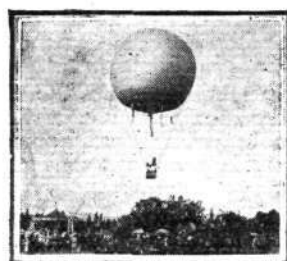
seen from the pilots' cockpit. These are revolution indicators and radiator thermometers. The petrol leads, as well as the engine controls, pass out to the engines from the fuselage through fairings.

As the machine is of somewhat large span the wings are made to fold back, in which position the overall width of the machine is reduced to about 27 ft. The hinge joints in the wings are of a simple but substantial type, as shown in one of the accompanying sketches. The space in front of the front spar joints is covered by an easily removable false

portion of the leading edge, as shown in the sketch. All the inter-plane struts are of spruce, streamline, of course, and the wing bracing is in the form of stranded cables, duplicated in the case of the lift cables and single for the anti-lift cables. The attachment of these cables and of the pin-jointed inter-plane struts is shown in one of our sketches. *Ailerons* are fitted to both upper and lower planes, and in order not to upset the *aileron* control cables when the wings are folded, these are passed from the body to a pulley on the rear spar hinge, which forms the pivot for folding the plane, and hence outward and forward again to a pulley on the front spar, from which the cable passes to the *aileron* crank lever. The elevator cables are placed outside the *fuselage*, while the rudder control cables pass inside the body, where they are protected, in the space occupied by the passengers, by aluminium casings.

The tail planes are of conventional type and do not call for any comment except to point out that the symmetrical tail plane is mounted on four brackets and is adjustable, although not during flight. The tail skid is mounted externally on a pyramid of steel tubes.

Each of the two undercarriages consists of two vees of wood, attached to the lower wing spars immediately under the engines. The following is the specification of the Central Aircraft Co.'s nine-seater:—Span, 63 ft. 6 ins. (with wings folded, 27 ft.); length o.a., 39 ft. 3 ins.; height, 12 ft. 6 ins.; weight empty, 3,850 lbs.; weight fully loaded, 5,850 lbs.; weight/sq. ft., 6.6 lbs; weight/h.p., 16.7 lbs.; engines, two Beardmore, 160 h.p. each; petrol consumption about 25 galls. per hour; oil consumption, 2 galls. per hour; speed range, 40-90 m.p.h.; duration, 2-3 hours.



THE NEW GERMAN "DELAG" COMMERCIAL AIRSHIP "BODENSEE"

ALREADY before the War there were in existence German commercial airships owned by the Deutsche Luftschiffahrts Aktien Gesellschaft, or DELAG, as the firm was commonly called from the initial letters of its title. The same firm is still in existence and has built a new airship, the "Bodensee," which is said to differ in several ways from the earlier ships. The following translation of a brief description of the "Bodensee," published in *Flugsportliche Rundschau*, may be of interest:—

"Compared with earlier types of airships belonging to the DELAG, the commercial airship "Bodensee" is of quite a different type, both as regards shape, construction, and engine arrangement. In the new airship have been incorporated all technical improvements which have been effected during the excellent development of airship construction during the War. Already at first glance it is noticeably of different proportions. It is more compact. That is to say, it is of shorter length in proportion to its diameter. While the well-known airships 'Viktoria Luise' and 'Hansa' had a length of 142 m. and a diameter of 14 m. 900, their cubic capacity being 19,700 cub. m., the 'Bodensee' is 120 m. long, 18 m. 700 diameter, and has a capacity of 20,000 cub. m. In spite of a smaller fineness ratio the 'Bodensee' is of graceful outline, and is of true streamline shape, which form, as is well known, offers a minimum of resistance. The speed of this airship is, therefore, considerably greater than that of previous ones. While these had a speed of about 70 km. per hour, the "Bodensee" does a comfortable 130 km. per hour. This increase in speed is chiefly due to the increased engine power. While the 'Hansa' had three engines of 150 h.p. each, the 'Bodensee' has four engines of 260 h.p. each, or a total of 1,040 h.p., compared with a total of 450 h.p. in the case of the 'Hansa.' The placing of the engines is also quite different, the four engines being placed in three cars, of which two are side gondolas placed approximately halfway along the length, and carrying one engine each, while the other two are housed in a rear gondola towards the stern.

"The passenger cabin is no longer built into a keel in the centre of the ship, but is built integrally with the navigation car, which is suspended under the bow of the airship. During flight the passengers are, therefore, very comfortable, there being no noise and no exhaust gases to inconvenience them.

"Apart from these improvements, the construction of the 'Bodensee' follows usual Zeppelin practice. There are 11 gas bags, each lying between two transverse formers. This division of the gas chamber into separate compartments

results in added safety of the passengers, as one or more of the gas bags may become empty without endangering the safety of the airship. The whole framework and the gas bags are enclosed in a doped cotton cover to reduce friction and to protect the balloons against strong sunlight.

"In the front gondola are all the control wheels, ballast and valve cords. In each of the side gondolas is an engine driving a two-bladed airscrew, while in the rear gondola are two engines driving one screw. At the stern are the rudders and elevators, as well as vertical and horizontal stabilisers. As all control systems are in duplicate, great reliability is provided, since one rudder or one elevator is sufficient for steering, while one engine will give the airship sufficient speed to proceed on her course. With all engines working the speed of the airship is 35-36 m. per second. With three engines running the speed is 31 m. per sec. With two engines the speed is 26 m. per sec., while with one engine only the speed is about 20 m. per sec. It will, therefore, be seen that even in case of one or more engines breaking down the airship has sufficient speed, driven by the remaining engines, to complete her journey.

"The gross lift of the airship amounts to 23,000 kg. at sea level. If the weight of the airship itself and its engines is subtracted, there is still a useful lift of about 10,000 kg., more or less according to elevation. As is well known, a height of only 80 m. reduces the lift of an airship of the size of the 'Bodensee' by about 200 kg., while an increase in the temperature of the air of 1°C. reduces the lift by approximately 80 kg. From the gross lift is usually subtracted about 2,400 kg. for petrol and oil. With this supply the airship can fly for 11 to 12 hours with all engines working, and 15 to 16 hours with three engines running. During that time the airship is capable of covering a distance of 1,500 and 1,800 km., respectively. According to the direction of the wind this distance will be increased or decreased, say between 700 km. and 2,500 km. The crew consists of about 15 officers and men.

"Of special interest is the fact that the 'Bodensee' is provided with wireless apparatus, which enables her to be in communication with both terminals of her route, while also affording passengers facility for sending private telegrams.

"The cabin, in spite of its necessarily simple arrangement, is very comfortable. The decorations and fitting-out have been undertaken by Prof. Pankok, and have been carried out at the Friedrichshafen works. The cabin reminds one of the dining-cars of a railway train, and all modern conveniences are provided."

WHIRLS FROM THE FOUR WINDS

THAT effort on the part of certain morning and evening dailies to be known as "the paper that gets the scoops" continuously leads to all sorts of ridiculous positions—although carrying with them at times anything but pleasant results to many associated with the object the "scoopers," at the moment, are out to "scoop." In this connection the *Evening News* last week was a bad offender over the scare line "All aircraft contracts cancelled" wheeze. Of course, nothing new out of the way had occurred at all. It was merely the natural sequence to the long since announced policy of the Air Ministry, in the form of the natural closing of certain contracts which were still, in a minor key, running. Yet shrieks in whole columns, with double-column headlines, was the method of treating this, the only little bit of "scoop" which was, that day, caught sight of quietly going to its home. But "yellow journalism" must be maintained by hook or by crook and d—the consequences.

INTERVIEWED upon this *faux pas* of our contemporary, an Air Ministry official spoke as follows:—

"To try and make out that this is the end of an epoch is absurd. No war work firm can expect to go on doing war work in peace time, and it is exactly the same with the aircraft firms as with munition works.

"The cutting of our last few contracts has been dictated by the national policy of economy, and by the fact that the number of Air Force Service squadrons has been reduced. But the national business move is as nothing to the cutting down which took place months ago, soon after the armistice.

"This does not mean that no more contracts for war aircraft will be placed. These few aircraft firms are simply undergoing the same inevitable change from war to peace time work which all firms making war material have undergone."

In other words, the main basis of this great "scoop" is old.

EVEN if D'Annunzio, judged by his present actions, be a "degenerate," as suggested, and his Fiume raid of the order of *Opera Bouffe*, at least his mind is clear and straight upon one point, the all-important value of aircraft in plans of offence or defence. In reviewing his "troops" last Sunday he said that aviation was of vital importance to the success of the Fiume cause, and therefore "the newly-established aviation camp must be defended at all costs."

It is to be hoped that our "degenerates" will also realise before too late the necessity of maintaining and having ready at proper strength in peace time, against troublesome days, the deciding arm of the future.

To see a little gratitude occasionally for services rendered is a pleasant experience. Last week at a meeting of the City of London Corporation, upon the proposal of Alderman Sir William Treloar, the following resolution was passed with

enthusiasm:—"That this Court desires to record its appreciation of the effective measures taken for the defence of London on the occasion of the many raids by enemy aircraft during the war, and especially on the night of May 19, 1918. This Court wishes to express the great indebtedness of the citizens and inhabitants of London for the untiring devotion and splendid services of the pilots, airmen, gunners, and others engaged under the command of Maj.-Gen. Ashmore on the night of May 19, when not only were seven of the enemy machines brought down, but so much further damage was done to the enemy that the Germans finally decided to abandon attacks on London."

AERIAL postage stamp collecting is striking quite a new note in philatelic circles. According to *The Times*, a leading stamp market authority recently expressed the opinion that aerial postage stamps are calculated to succeed the ever-popular war issues in the collector's favour.

The latest aerial postage stamp comes from the South American State of Colombia, where, on the inauguration of an experimental air-post service between Barranquilla and Puerto Colombia recently, a small supply of the current two centavos rose was overprinted, "1° Servizio Postale Aereo." It is stated that the issue was restricted to 200 specimens.

Mr. Hugh Vallancey also has a lot to say in his double number of *Stamp Collecting* which he has just published, in an article on aerial posts and postage stamps. This form of marking aerial history is very fascinating.

SIR PHILIP SASSOON, by his purchase of an Avro for his private use in getting about, particularly between London and his country residence near Lympe, is, we believe, really the first private citizen to so provide himself. The time occupied in reaching Lympe—a distance of about 70 miles—will be about 45 minutes as against the fastest train with 90 minutes. Naturally for short distances like this, the difference in saving of time is hardly so marked as when the mileage is increased. But to suggest, as has been done, that therefore, having also regard to the difference in cost, this very progressive departure on the part of Sir Philip is not worth while, is to view his enterprise from the narrowest possible point of view. A few examples upon the same lines are likely to help along the cult of air-travel in a more practical form than miles of theoretical tosh that only under such and such conditions will it be possible for the thing to be done. It recalls the old old story of the man when told by the policeman he could not do a certain thing, replied promptly, "Its no use your saying I can't do it, I've jolly well done it!"

To point the moral and by way of an object lesson in the advantages of the aeroplane in long-distance work, there is the flight starting from London at 4 a.m. last Saturday of Lieut.-Col. Henderson and Maj. Lloyd, to Nice, the latter city being

Some R.A.F. Impressions



"Spic." Lieut.-Col. M. Spicer, A.Q.M.G., R.A.F., in the Field and Universal Provider.

reached at 3 o'clock the same day. Eleven hours to the Riviera! Phew! Some saving! And no fuss about it.

It looks as if, after all, Sr. Janello, who piloted the Savoia in the Schneider Cup contest, will lift the £1,000 and the trophy for Italy. The Royal Aero Club Committee having gone into the matter recommends the F.I.A., or F.A.I., to award the race to the Savoia, and there is little doubt, under the circumstances, that this recommendation will be adopted. Congratulations, therefore, to the Italian team for their sporty win.

UNDER slightly different conditions a prize of £500 and a trophy value £100 has also been put up by the Royal Aero Club to be competed for in the Solent and Southampton Water in the last week of October. As the alighting tests will follow the actual speed race, there should be a good deal better chance of comparing performances in and on both elements.

ROTTERDAM municipal authorities are well alive to the wisdom of facilitating the use of their port by aircraft. The authorities are planning a permanent aerodrome with suitable space for seaplanes to the south-west of the town. In little England, by way of contrast, the inclination is to steadily close down well-established centres. Sack the lot!

ACCORDING to the *Petit Journal* the German aviator Boehm, who established a long-distance record before the war, intends to undertake a tour of the world with a machine which, it is said, has the property of being unable to fall.

Without doubt "an aeroplane of distinction," as one paper described it, but a pretty predicament the pilot would be in if he ran out of petrol. As in the old story, he'd just have to starve to death up in the ether, or be shot down to save his life.

CAPT. A. E. COOPER, R.A.F., in his series of pictures, which forms part of the unique Airship Exhibition got together by Lady Sybil Grant at Prince's Galleries, is very convincing in his method of treating his subjects of terra firma as seen from above. But then Capt. Cooper is also unique inasmuch that he ascends into the air to depict what he sees with his artist's eye. Most of these clever drawings are the result of opportunities which the artist had of fixing his impressions from airships based on East Fortune, Edinburgh. Naturally the subjects are related to that district, as the titles will suggest. "Edinburgh Castle from the Air," "Leith and N.S. 7" (painted from another dirigible), and "Aberdeen from R 29," are three striking examples. About 500 ft. up is Capt. Cooper's favourite height for obtaining effects. It is well to know that several of the artist's pictures have been secured for permanent preservation by the Imperial War Museum.

"AERIAL TRANSPORT" is the title of a new work to be immediately issued by Messrs. Hodder and Stoughton, from the pen of Mr. G. Holt Thomas, to whose enterprise is due the inauguration and maintenance of the first express air service between London and Paris. The book, which has an introduction written by Lord Northcliffe, is the result of many requests to Mr. Holt Thomas to devote himself to a book of this character. In describing his aim in this volume the author says:—

"What I desire particularly is not to appear a fanatic. I have studied flying for 13 years. Long before the War I urged the development of aircraft as weapons; and I can say without boasting that, when War came, my predictions were more than fulfilled. Today I am just as keen an advocate of the aeroplane in commerce, and just as certain—even, in fact, more so—that my contentions are right. But I am quite as aware of the limitations of a commercial aircraft as I am of its powers.

What I seek, in this book, is to show the actual place of the aeroplane in our general scheme of transport; the precise work it can do usefully, with its speed of 100 miles an hour, and the sort of thing it would be foolish to ask it to do. Specially, too, I emphasise the point, which is fundamental, that the aeroplane does not compete with existing forms of transport. It does something they cannot do; it supplements, not supplants, them."

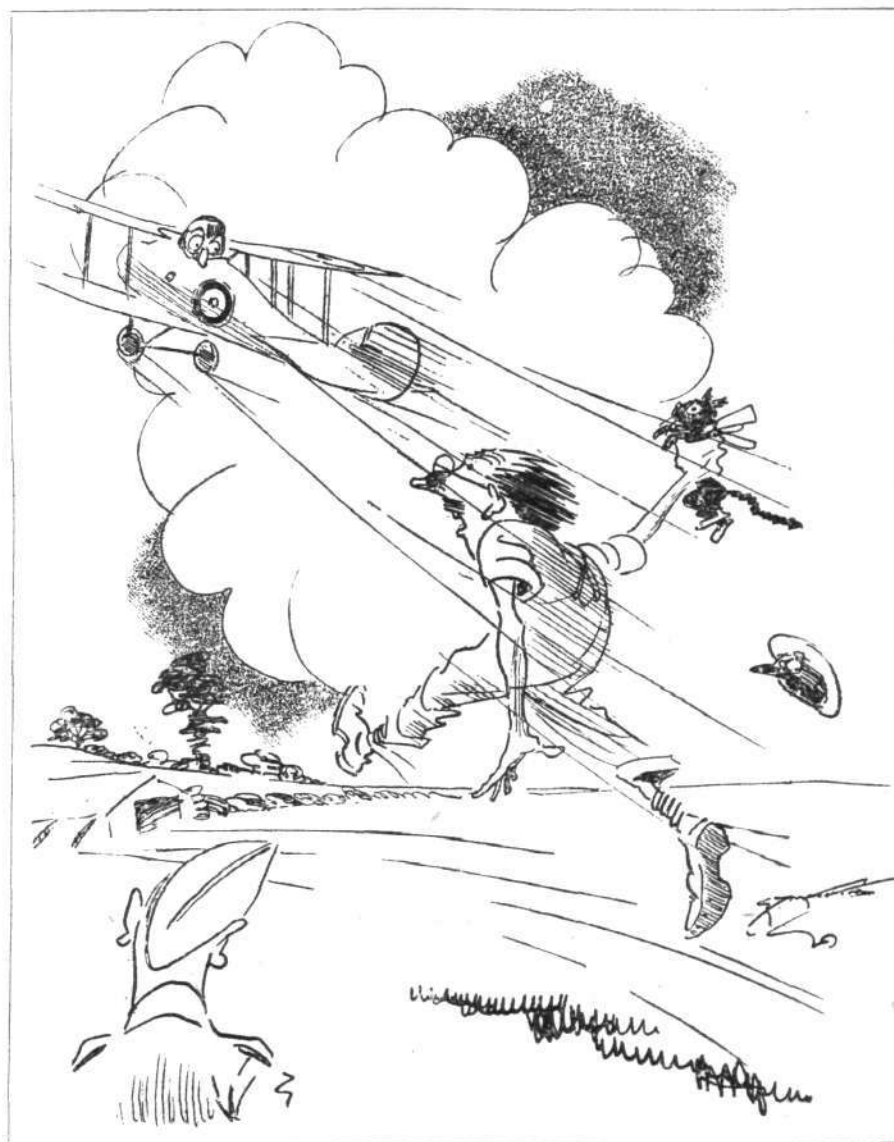
As Mr. Holt Thomas's book will contain close upon 100 full-page reproductions of a series of specially-selected photographs, each illustrating some phase of aerial transport, its advent should be looked for with considerable interest by all those concerned with the progress of aeronautics.

"CORISANDE" of the *Evening Standard* is responsible for the following recital in connection with a new social phase of flying:—

"Flying parties should soon be all the rage, judging by the success of the pioneer affair given by Mrs. J. D. Campbell at Upper Gattton Park, in the perfect weather of Saturday afternoon. The stretch of parkland into which the lawn at Upper Gattton merges makes an ideal landing place, and the surrounding well-wooded country is quite charming for bird's-eye viewing. Flying must raise the spirits, for everybody came down laughing and full of enthusiasm as they described how near they had been to Croydon or how much they had seen of the sea.

"Aeroplanes seem more modern than ever when one goes and climbs into one after tea in the shade of great cedars like those on the lawn at Gattton, which were planted some 300 years ago—a time when even road travel was difficult and adventurous. They are probably the finest group in the country.

"Nearly all the guests were eager to fly. Small boys and girls were especially keen, and one delighted mite who got no view at all because her head didn't reach above the aeroplane body went for a short flight and came down still smiling."



"Hi, Sir! You've forgotten your mascot."

SOME FACTORS IN THE WORKING OF LARGE AIRCRAFT

By B. THOMSON, B.Sc. (E.), A.C.G.I.

THE opinions set forth in the following notes are the result of practical experience in the working of large aircraft principally gained with the original Handley Page Squadron of the R.N.A.S. in which the initial development of such machines took place.

In spite of certain disappointments, subsequent experience with other types of varying makes have only served to confirm a belief held from very early days in the final success of the big aeroplane.

For the moment, owing to lack of sufficient employment, smaller types may prevail, but once air transport is established, the economy of the big machine in pilots, personnel, land and equipment per ton carried will render it essential.

In the meantime it has appeared worth while placing certain factors on record for the benefit of commercial men interested in aeronautics, but more especially for the designer who, during the War, has been kept in woeful ignorance of the conditions under which his machine was worked.

The object of this article is to point out certain difficulties commonly met with in the working of large aircraft, and to discuss the methods by which these can be overcome. Many of these difficulties are common to all aircraft, though machines of under five tons flying weight are not contemplated here. Seaplanes have been left aside though many of the observations made apply to them, and it is taken for granted that power systems employing two or more engines will be used.

Apart from aerodynamical questions, many of the broad lessons of aerodrome experience have yet to be conveyed to the drawing-office. Manufacturers are able to build machines which work, but the difficulties met with in working them have not yet received the study they deserve. For commercial success they are of equal importance with the flying qualities of the aircraft. The major portion of the expenditure of the company will be on personnel and equipment, and this is a direct function of the facility or otherwise with which the machine used can be operated.

Three serious objections are generally levelled against large aeroplanes:—

(i) They are very cumbersome to handle on the ground, and require costly shed accommodation, even when made to fold.

(ii) On multi-engined machines minor repairs to one motor puts the whole machine out of action, and temporarily render useless the capital locked up in it.

(iii) Owing to their size no inspection or repair work can be done on them without the use of elaborate scaffolding or ladders.

The writer frankly admits the truth of these accusations so far as present-day machines are concerned, but all can be met. To the first, it can be replied that handling difficulties only occur when the machine is not moving under her own power, and that the policy of folding large aeroplanes and housing them in sheds is a doubtful one, the expenditure on sheds having to be balanced against the cost of making good weathering of the machine when left in the open. To the second of these objections, the answer is that the policy of mounting so unreliable a piece of mechanism as an aero-engine as an integral part of so reliable a machine as an aeroplane is obviously wrong. The motor, complete with its installations, should be a separate unit, as readily detachable from its parent structure as a locomotive is from its train. The third objection can be met by the provision of suitable hand and foot-holds and cat-walks about the machine; a trivial matter, it is true, but of as real importance as the other two, though it never seems to receive any attention from the average designer.

Discussing the question of ground handling and maintenance first, it resolves itself into (a) Is there a financial advantage sufficient to warrant the use of sheds as opposed to anchoring out? (b) In the event of anchoring out being used, what alteration to the design of machine and what type of mooring must be used?

No exact figures can be given on the cost side of the question, but the conditions of working can be balanced up. If shed housing is adopted, in addition to the cost of sheds and their repairs, handling tackle and men to work must be provided for getting the machines in and out, and the aeroplanes used must be made to fold so as to economise floor-space. The body of men required is not inconsiderable, and the cumbersome unhandiness of large aeroplanes is realised to the full. The delay in getting a spare machine away on a flight in the event of any breakdown will be large, owing to the time taken

in towing out, unfolding, and rigging with a body of men, necessarily kept at a minimum in number.

Should a system of mooring-out on turn-tables, on to and off which machines can taxi under their own power, and on which they are free to swing head to wind, be used, the expenditure on sheds is restricted to that necessary for repair purposes, handling parties disappear, and time lost in getting in and out of sheds is saved.

The advantages offered by shed maintenance are that repairs can be executed in comfort, and that weathering is reduced, increasing the life of the aeroplane. It is no exaggeration to say that 80 per cent. of the running repairs that have to be made to aircraft are attention to engine and engine installation. The details of a unit system of engine mounting will be discussed later. It is sufficient here to remark that such a system will transfer all engine work to the engineer's shop, the proper place for it, leaving only minor machine repairs to be done in the flight shed. The nature of these repairs is such that the majority of them can readily be performed in the open, while for large overhauls a machine will have to be sent to the repair shed no matter what maintenance policy is adopted.

The gain in the life of a machine housed in a shed is probably less than is commonly supposed. Consider the conditions under which aircraft were worked during the War. Except in the case of seaplanes, hardly any effort was made to protect them from weathering. The canvas sheds used on active service invariably leaked in rainy weather, and were no guard against the effect of damp atmosphere; in sunny weather they were stiflingly hot, yet machines kept in them gave extraordinarily little trouble, in spite of a form of construction having glue, varnished timber, and fabric as a basis. Towards the end of the War large seaplanes were moored to buoys as a regular practice, to avoid the difficulty of hauling them up out of the water. And recently, in the anything but salubrious climate of Nova Scotia, the large four-engined Handley Page was erected and maintained in the open for a considerable period.

It is admitted that to make a success of a policy of anchoring-out, the machine must be designed for it, and the efforts made in seaplanes to keep water from reaching the interior of the wings must be extended to the whole machine.

The fundamental difficulty is the use of doped fabric for a covering material. Timber fuselages, such as that of the Tarrant, but fitted with hatches over the cockpit, form a solution for the body. The tail plane is of small area, and a similar covering may be used; but until some means of working the wing surface in as part of the carrying structure is obtained, the use of fabric appears unavoidable for the main planes. Much may be done by heavier doping and varnishing, but main planes on a machine in continuous service will probably need recovering every six months. They will certainly demand more frequent attention than the rest of the machine, and, during design, arrangements should be made for the removal of the wings as complete units to a repair shop and for the ready substitution of another pair.

Next to fabric, the most serious problem to be faced in the design of a machine that is to be kept in the open is the protection of the engine from damp. Where a suitable unit system is evolved, with proper handling plant, engines will in all probability be stored in the engine shop when not actually at work, thus evading the question. If machines fitted with engine-rooms be used, these can be made waterproof and provided with internal heating, giving a much better protection to the motors than a cold, damp canvas shed.

The motors of flying-boats are rarely cowed, yet these machines are maintained anchored out with nothing but a tarpaulin sheet over the engines, which do not seem to suffer very seriously from the practice.

On the whole, the writer is of opinion that the gains to be expected from shed storage grow less and less as the size of the aircraft increases, and that the largest machines now in use are well past the dimensions at which the policy is unsatisfactory.

Passing to the second objection, that of unreadiness for flight owing to one of a number of engines being out of action, and its solution by means of a detachable engine unit system, before proceeding to discuss the pros and cons of such a method, some indication of what is meant by the phrase must be given. The initial conception in the writer's mind

is that of a wing *nacelle*, complete as a unit, with cowling, oil and water cooling systems, and engine-bearers provided with slinging hooks and supported from the structure of the aeroplane by a framework of struts attached to the engine-bearers with quick-release pin-joints. The only pipe connection to the *nacelle* is that of the main petrol feed. Controls are passed by telescopic torsion tubes working over fixed angles so that no adjustment is required when changing units. Engine instruments are either placed on the side of the *nacelle* where they can be seen by the pilot, or have their readings repeated electrically on his instrument-board.

The changing of a *nacelle* is then simply a matter of disconnecting the petrol pipe and quick-release pin-joints, when the whole unit can be slung out and replaced by another.

This matter of quick change of *nacelles* is the foundation of the unit system; if a sparking-plug fails it should delay the aeroplane less to change the *nacelle* than to locate and replace the missing plug.

It is hoped that the foregoing makes clear the underlying intention on which the advocacy of a unit system is based. Discussing its primary qualities the chief advantages are: (a) By the provision of a percentage of spare engine units, machines can be kept constantly in action. (b) Delays due to the tracing of obscure engine troubles are avoided, the work being transferred from the aerodrome to the engineer's shop, and the machine is sent away with another unit. (c) If units are removed from a machine as soon as she arrives from a long flight, they can be examined and tested under complete supervision, and minor faults can be detected before they develop. (d) The major portion of the engineers' work is done in the workshop, under the eye of the chief engineer, and where tools and appliances are ready to hand. To work the system successfully calls for special design in the aeroplane and for special plant in the shape of motor lorry cranes, capable of carrying an engine unit between the workshop and the machine, and holding it while it is fixed in place or detached; and also for special stands in the workshop on which units can be mounted for repair or test. The disadvantages of the system are: (a) It renders the provision of an engine-room somewhat difficult, especially within the *fuselage*. (b) Since, owing to the size of the tanks, the petrol system will probably have to be a fixture on the machine, one main pipe connection will have to be broken each time a unit is changed. (c) Certain other mechanical difficulties of a minor nature are introduced into the lay-out of controls and instrument connections.

The advantages of such a unit system, from the point of view of getting work out of the plant available, are so obvious as hardly to need emphasis. With it the figure of 80 per cent. of the total time out of action for engine repair can probably be reduced to a tenth, that is the total time out of action for repair will be well below a third of its present value, quite possibly below a quarter; for 80 per cent. is on the low side. The writer is so convinced of the value of a unit system that, if the choice lay between it and the provision of an engine-room in which small repairs could be made during flight, he would unhesitatingly select the former. Anyone acquainted with the working of aircraft will agree that it is not engine troubles in the air that prevent flying so much as engine troubles on the ground.

The problem of providing an engine-room is not difficult in the case of machines in which the engines are mounted in wing *nacelles*. To arrange the whole *nacelle* as a detachable unit, engine-room and all, is mainly a question of the gear available for handling the unit when detached. The difficulty is that such a *nacelle* will be bulky, so as to afford working space round the engine, and that probably two or three engines will be fitted in it, hence, unless these engines are arranged so that they can come away separately, certain motors which are capable of running will be lying idle while another is being repaired. A factor favourable to the unit system, but adverse to the use of engine-rooms, is the promising development of the static air-cooled radial motor. Such engines are readily adapted to the needs of a unit system, but it is not clear how reasonable cooling can be obtained combined with the provision of an engine room enabling a man to work on the engine when running, without grave risk from the propeller.

If an engine-room is to be used, the right place is undoubtedly the *fuselage*, and the adoption of this lay-out only awaits the production of a suitable gear-drive to the airscrew. Engines so mounted will never be so readily removable as those fitted in to wings, but even here a unit system can be adapted, the units either being dropped by tackle through the floor of the *fuselage* or slid out through the side on rails.

Turning to the third serious objection put forward—that

large machines cannot be worked on without the use of scaffolding or ladders, any casual observer of the process of getting a large machine away for a flight will be struck by the number of ladders used and the fact that a few steps and hand-holds would render all of them unnecessary. What is required is a means of entering the *fuselage* from the ground, doors from the *fuselage* on to the bottom plane, walking platforms along the main spars and working platforms on each side of the engine *nacelles* if no engine-room is provided; in short, means whereby any part of the machine can be reached and inspected without the use of extraneous gear, which is never available when it is wanted, and requires men to move it about. The increase in weight and head resistance, on a machine of the size contemplated, will be negligible, while the gain in efficiency owing to increased ease of working will be very large.

Having now disposed of the three primary objections to large aircraft, certain other points remain to be touched on. The average aeroplane is very fairly well divided up into units, composed of power plant, wings, body, tail, control, chassis and tail-skid; the dismantling of these units as a repair job is reasonably easy, and the plea for a quick detachable power unit is only put forward owing to the large amount of attention needed by this part in comparison with the rest. The quick repair of the aeroplane is mainly a matter of having spare units available and handling plant by means of which they can be put in place. During design, attention should be paid to the question of handling complete units, suitable means for attaching handling gear being provided. Wings or tail should be capable of removal as complete units from the machine, and generally are, but the working out of the details of attachment to the standing parts could be greatly improved.

Controls are the chief offenders in this respect, wire leads being arranged without any consideration of the job of making-up. Small fair leads of tube are used, and pulley-guards fixed in such a manner that, when a wire is renewed, it has to be led through them and soldered up in place. Fair leads should be avoided or be made up in the form of rings sufficiently large for the loop and eye of the end of the wire to pass through. Pulley-guards should be so made that by the removal of the pulley-bolt the pulley and guard come adrift and leave the wire free to slip clear. By this means control-cables can be made-up in lengths and kept in the store, and the time a machine is out of action to replace a frayed wire greatly reduced. The run of control-cables should take due account of the factor of ease of inspection. Action balance cables, running across the top of a plane some 20 ft. off the ground, are not examined as often as they should be.

In the design of chassis, attention should be paid to ease of wheel changing and of re-winding of the shock-absorber elastic. It should be possible to jack the machine up and perform either of these operations without the use of specially long jacks or tressels. Tail-skids, if sufficiently substantial, give little trouble, except that the metal shoeing of the timber soon wears through and has to be renewed. Much thicker metal should be used, and the practice of attaching the shoe by wood screws should be dropped, bolts being preferable on a part that needs constant replacement.

Before concluding, it may be pointed out that large aircraft possess, by virtue of their size, certain advantages with which they are not usually credited:—

Present theories of aerodynamics point to the use of high surface loading as a means of increasing efficiency, the reduction in structure weight and head resistance allowing a bigger load to be carried at a higher speed. High surface loading means a high landing speed, and in practice the larger machine is easier to land at a given speed than the smaller. An error in judging distance is of less effect. To "pancake" 3 ft. on a fast single-seater may mean a crash, but provided the chassis design is anything like reasonable, is of little importance on a machine weighing 5 tons.

Given equally good piloting, the run on landing, and the landing speed, are very intimately connected with chassis design, and the writer has no hesitation in allotting more importance to this factor than to minute variations of the Kymax of the wing employed.

Modern machines with low-built chassis have to be landed fast to prevent the tail-skid touching the ground before the chassis and throwing the machine on to her nose or breaking a *fuselage*. A mile or two an hour at top speed may be gained by their use, but at a heavy sacrifice in enlarged aerodromes and risk of crashes.

Observation leads also to the conviction that the value of the maximum lift coefficient is appreciably affected by the chord of the wing. There may be little scientific basis

for the belief, but biplanes of over 10 ft. chord appear to have a landing speed corresponding to a Kymax 5 or 10 per cent. in excess of monoplane test figures. So that large aeroplanes seem to have a double advantage where high loading is concerned.

It is only fair to point out that many of the past difficulties of working have been due to War conditions. Design was done hurriedly, and the designer's experience of working machines stopped at the door of the erecting shed. True, he received reports of trials, but these only checked his work as the designer of something that would fly; they gave him little indication of the working troubles of the vehicle he had produced.

The accusation of unhandiness on the ground is largely due to the military instinct to use man-power and avoid the use of machinery wherever possible. Mechanical development in warfare on land has been greatly hindered owing to this tradition. The writer does not criticise the attitude here; he merely comments on it as an explanation of a most serious argument brought forward against large aircraft.

Conditions of commercial work where machines are

operating from fixed bases over fixed routes allow full advantage to be taken of the possibilities of mechanical handling, the most valuable one being the unit system of engine installation. Under present working conditions an aeroplane can be available for flight 12 hours out of the 24, four days a week. Unit organisation with suitable plant should enable her to be available 18 hours out of the 24 for six days of a seven-day week: 108 hours compared with 48 with no appreciable increase in working cost.

Detail questions have been left aside from these few notes. Apart from repetition production machinery and large power plants, the study of economy in operational labour is comparatively new to engineering. In aviation it is for all practical purposes unknown. Development has taken place under the utterly artificial conditions imposed by war, where cost considerations can be neglected. As a result, the expense of using aircraft is prohibitive. To secure its reduction the fundamental need is a motor having a reasonable working life. This concerns the engine designer. The second is greater economy in the working of the machines themselves, and it is hoped that the lines here indicated may prove of some value in this direction.



COMMERCIAL AIR-TRANSPORT

BRIGHTON

One of the Avros took some visitors to a garden party at Reigate on Saturday—another example of the way in which the small aeroplane adds to the amenities of life. Flying was only possible on six days. The machines went over to Chichester on Thursday as usual, and took up passengers there.

CAMBRIDGE

During the week the Cambridge School of Flying gave their sixth exhibition show at Hardwick Aerodrome on September 20. Numerous passengers were carried on Avros and Airco 6's, and in the evening a lady flew to Skegness on an Avro. Lt. Ortweiler gave an excellent exhibition of stunt flying, the particular features of which were his successive loops and an exceptionally clever side-slip landing. Passenger flights were carried on by Capt. Birkbeck, D.F.C., and Lieut. Fresson, the latter of whom flew to Skegness in the evening to carry on passenger flying there.

HOUNSLOW

The variable weather of the past week seems to have affected the number of Avro flights at Hounslow. In course of time, no doubt, Londoners will realise that autumn flying can be just as enjoyable as going aloft in an August heat wave. In fact, a clear morning, with a touch of frost, may give a far finer view than one gets when a summer haze hangs over the earth—while as for a bright snowy morning, few things can equal the delights of flying on such a day. But the holiday spirit seems to wane with the passing of summer, and, in consequence, only 120 Londoners made flights during the week. Two cross-country journeys were made, to Stow-on-Wold and to Cambridge, both returns.

Three aeroplanes arrived by air from Manchester during the week.

One of these was taken on by Capt. Bradley to Lausanne. He left Hounslow on Wednesday, 17th inst., at 2.15 p.m., and arrived safely on the shores of Lake Geneva on Saturday, 20th. No attempt was made to break records, the Alps were safely crossed, and the journey was uneventfully successful. The Avro will give demonstrations at Lausanne and take up passengers under an arrangement with M. Pethoud.

WINDERMERE

This week has been a record one for passengers at Bowness. The Avro seaplanes have carried out 32 flights, totalling nine hours of flying. Several people have had half-hour flights. Excellent views were obtained of Scawfell, Langdale Pikes, Helvelyn, Kirkstone Pass, Thirlmere, etc.

In particular one lady and gentleman engaged a machine for a half-hour flight over Ulverston and Morecambe Bay, and from a height of between 3,000 and 4,000 ft. they enjoyed some especially splendid views of cloud effects.



A Canadian Airship Prize

By way of commemorating the visit of the Prince of Wales to Canada and to encourage the development of a new industry in the Dominion, as well as promoting better feeling between Canada and Japan, Mr. Norman Yarrow, head of Yarrow's, Ltd., Esquimalt, son of Sir Alfred Yarrow, has offered £10,000 for the first non-stop flight across the Pacific from Vancouver Island to Japan by an airship made in Canada and manned by Canadians. The flight must be made before December 31, 1921.

Any parts and materials which are not being made in Canada at the time the airship is constructed may be imported. Only lighter-than-aircraft can compete.

New Height Record

On September 18, at New York, Mr. Roland Rohlfs claims to have reached a height of 34,610 ft. in a 400-h.p. Curtiss triplane in 78 min., thus bettering his previous figure. This flight was observed by officials of the Aero Club, who sealed M. Rohlfs's instruments when he landed and sent them to Washington for verification. The pilot reported that he experienced trouble in breathing at 20,000 ft., being obliged to use his oxygen bottle. At the top of the climb the thermometer registered 43 deg. below zero. At 31,000 ft. the machine dropped 600 ft. vertically, as recorded by the barograph.

Swedish Aviator's Record Flight

The Swedish Army aviator, Rodehn, on September 21 established a Scandinavian record by flying the whole length of Sweden from Ystad to Haparanda and thence to Boden, a distance of 1,420 kilometres, in 7½ hours, without landing. He used a 260 h.p. Swedish aeroplane.



AVRO SEAPLANES AT BOWNESS, WINDERMERE: The pilot in charge is Capt. Howard Pixton, who won the Jacques Schneider Trophy at Monte Carlo in 1914.



Deaths

Lieut. ARTHUR E. RUDGE, R.A.F., 203rd Squadron, who was reported missing after an aerial combat on July 22, 1918, and is now presumed killed on that date, at the age of 19, was the younger son of J. E. and Julia Rudge, of Paris, and 9, Belsize Park, N.W.

Sec. Lieut. JOHN SYERS WALTHER, R.F.C., who was reported missing on September 19, 1917, and is now officially presumed killed on that date, was the second son of Mr. and Mrs. Walthew, Harpenden.

Married

Lieut. HERBERT VICTOR ALBROW, R.A.F., eldest son of Mr. Albrow, Epsom, was married on September 17 at St. Columba's Church of Scotland, London, W., to MARGARET MAXWELL, younger daughter of the late Mr. John SMALL, of Wentworth, Jamaica, and Broughty Ferry.

Flight-Lieut. A. S. ELLERTON, O.B.E., R.A.F., was married on September 13, at the Chapel Royal, Savoy, to MAUREEN GILLILAND, daughter of Mr. T. F. HUSBAND, I.S.O., M.A., and Mrs. Husband, of 69, Belsize Park Gardens, Hampstead.

Capt. OVERTON PRESTON, M.C., R.A.F., second son of the late Martin Inett Preston and Mrs. Preston, The Park, Nottingham, was married on September 8 in London to VICTORIA MARY, third daughter of the Rev. PETER DONALDSON, M.A., B.D., late Pro-Consul at Salonika.

To be Married

The engagement is announced between NORMAN SYDNEY BEALE, M.C., Légion d'Honneur, late Lieut., East Surrey Regt. and R.A.F., eldest son of Mr. and Mrs. S. B. Beale, of Sutton

House, Sutton, and MARGARET ELEANOR ST. HILL (NORA), youngest daughter of Mr. and Mrs. Arthur Brock, of Haredon, North Cheam.

The engagement is announced of Capt. WILLIAM BARHAM FOSTER, late R.A.F., son of Mr. and Mrs. Frank Foster, of Buenos Aires, and ALICE MARGARET, daughter of the late OSWALD FRANCIS STENNING and Mrs. Stenning, and granddaughter of Sir Alexander Stenning, of West Hoathly, Sussex.

The engagement is announced between ALFRED CYRIL SPENCER HAWKINS (late R.F.C.), only son of Mr. and Mrs. Alfred Tolhurst Hawkins, of 42, Portland Place, W., and BERYL SEFTON, younger daughter of Mr. and Mrs. ALFRED SPENCER, of 70, Inverness Terrace, Hyde Park, W.

The engagement is announced between Mr. W. A. LYON, R.A.F., youngest son of the late Dr. Robert Lyon and of Mrs. Lyon, 10, Baskerville Road, Wandsworth Common, and SYLVIA ELLEN, younger daughter of Capt. and Mrs. E. U. STORY, Cherry Garden House, Folkestone.

The engagement is announced between Capt. C. W. MACKEY, R.A.F., younger son of Mr. and Mrs. W. J. Mackey, Highlands, Maidstone, and KATHLEEN, younger daughter of Professor and Mrs. H. BRIGGS, 3, Rodney Street, Liverpool, and Hoylake, Cheshire.

The engagement is announced between Wing-Com. EVELYN HAYLEY SPARLING, R.A.F. (lieut.-com., R.N.), younger son of William Sparling, of 10, Upper Maze Hill, St. Leonards, late Bogawantalawa, Ceylon, and SILVIA MAUD, only daughter of G. THORN-DRURY, K.C., of 42, Roland Gardens, S.W. 7.



THE AUSTRALIAN GOVERNMENT FLIGHT COMPETITION

THE Air Ministry announces:—The flight for a prize of £10,000, which was offered by the Australian Government in March last, was the subject of a conference on September 19 between representatives of the Air Ministry, the Australian Commonwealth, the Royal Aero Club and the competitors.

It has always been recognised in official quarters that a flight between England and Australia would be a performance of very great difficulty in the present state of ground organisation, and that considerable time must necessarily elapse before the project could mature. Since little information was available on the proposed line of route beyond Calcutta, it was decided jointly by the Commonwealth Government, the Air Ministry and the Royal Aero Club that no competitor should be allowed to start until the Air Ministry had been able to obtain reliable data concerning the section of the route between Calcutta and Port Darwin.

Brig.-Gen. A. E. Borton, D.S.O., and Capt. Ross-Smith of the Australian Flying Corps were accordingly despatched without delay to carry out a special survey of this section, and to report on the possibility of the flight being successfully attempted. These two officers have now returned to England, and furnished detailed information regarding their investigations. They reported that beyond Calcutta the route lies over country far from favourable for aeroplane flying. Between Calcutta and the Dutch East Indies the only landing grounds suitable for immediate use are the race-courses at Rangoon and at Singapore. Beyond Singapore,

where the route lies over the Dutch islands, the next place where good landing facilities exist is Bandoong, and thence no landing ground is at present available for the intervening 1,760 miles to Port Darwin.

As the weather after the end of November is most unfavourable, General Borton expressed the view that if the flight is to be made this year only aeroplanes possessing a range of at least 2,000 miles could make the attempt with any hope of success. He explained also that the difficulties would be considerably lessened if competing machines were fitted with floats at Calcutta and continued the journey as seaplanes, as there are several suitable harbours and inlets on the route to Australia.

With regard to the portion of the route between London and Delhi the same difficulties do not present themselves, as the organisation created by the Air Ministry for service flights is meantime available. Owing to the weather conditions after the beginning of November, however, it may be necessary for competitors to fly via Malta and the north coast of Africa to Cairo. From Cairo to India the difficulties to be faced are greater and vast stretches of uncivilised country have to be traversed. Although more than one flight has been made over this portion of the route, it cannot be said to be in regular operation.

The Air Ministry have placed all available information at the disposal of competitors, and are arranging for the granting of such facilities as have been created and exist, and to keep competitors posted with any progress or developments.

Paris to Cairo and Back

COM. VUILLEMIN, who started on August 11 to fly from Paris to Cairo and back, landed safely at 7 p.m. on September 9 at the Villacoublay aerodrome.

The outward journey was effected without incident in 30 hours of actual flying. For the return Com. Vuillemin, after the first stage, Cairo-Constantinople, left the Turkish capital at 3 a.m. on September 8, and the same evening, after a halt at Naples, reached Istres, near Marseilles. The distance each way, is about 2,700 miles.

A Height Record Prize

CARRYING out a wish expressed by the late Leon Morane, his brother, M. Robert Morane, has presented to the Aero Club of France a challenge cup and a sum of 10,000 francs. The Leon Morane Challenge Cup will be given to the French aviator, who on a French built machine, holds the world's altitude record, and when the record is not held by a Frenchman the cup will remain in the custody of the Aero Club of France. Regulations for the cash prizes will be drawn up later.

THE ROYAL AIR FORCE

London Gazette, September 16.

The following officers have been granted short-service commns. in the ranks stated, with effect from Sept. 16. They will retain their seniority in the substantive rank last held by them prior to the grant of the short-service commn. :—

Squadron Leaders.—J. S. T. Bradley, O.B.E. (S.O.); H. E. J. Hewitt (Ad.).
Flight Lieutenants.—C. W. Bailey (A. and S.), L. F. P. Bawn (T.), A. M. Blake, A.F.C. (A.), L. O. Brown, D.S.C., A.F.C. (A. and S.), J. M. Burke (T.), D. K. Cameron (T.), B. E. Catchpole, M.C., D.F.C. (A.), H. L. Crichton, M.B.E. (S.O.), F. R. P. Dexter (Ad.), W. M. Fry, M.C. (A.), H. H. James (A.), C. W. McCann (T.), P. H. Mackworth, D.F.C. (A. and S.), D. O. Mulholland, A.F.C. (A.), G. C. Rhodes (T.), P. D. Robertson (T.), W. G. Stephenson-Peach (T.), G. Stevens, O.B.E. (T.), C. A. Taylor (A.), B. C. Tooke (S.), C. J. Truran, A.F.C. (A.), S. R. Watkins, A.F.C. (A.), D. W. Wilson (S.O.), P. Worthington, M.C. (T.), T. K. Young (T.).

Flying Officers.—C. D. Adams (A.), J. M. Adams (Ad.), H. C. Atkin (T.), H. Auliff (Ad.), V. G. Austen (A.), H. B. S. Ballantyne (Ad.), J. F. T. Barrett (A.), H. F. V. Battle (A.), L. N. J. Bennett-Baggs (A.), W. Best (T.), A. T. Cooper (S.O.), E. D. H. Davies (S.), P. H. Davy (A.), D. W. Dean (S.O.), T. H. Evans (S.O.), A. L. Fiddament (A.), W. C. Green, M.C. (T.), J. D. Hewett (A.), R. V. J. S. Hogan (S.O.), A. Holmes (S.O.), W. E. Lunnon (A.), C. H. Masters (S.O.), J. V. Medcalf (A.), W. D. Miller (S.O.), F. J. Moule (A.), H. W. Prockter (T.), C. Rapley, M.S.M. (T.), D. B. Robertson (A.), W. A. Rochelle (A.), L. T. Sanderson, D.S.M. (S.O.), P. L. Sant (A.), J. T. Vernon (S.O.), W. W. Whitehead (T.), R. F. Wilson (T.), W. K. Yarnold (T.), R. W. G. West (A.).

Observer Officers.—R. B. Gordon, D.F.C., R. B. Hunter.
It is intended that officers employed as Stores Officers or on "Q" duties shall belong to the new Stores Branch when formed. Officers appearing in this *Gazette* who are at present so employed will be transferred to this Branch on its formation, and will accept these short-service commns. on that condition. They will then come on to the rates of pay of that Branch, but will meantime be permitted to draw the higher rates laid down in the new scheme for officers of the General List. Any officer posted to the Stores Branch on its formation will then have the option of declining his short-service commn.

Permanent Commissions

The notification appearing in the *London Gazette* Aug. 1 appointing the following officers to permanent commissions, is cancelled:—Lieut.-Col. R. A. Bradley (A.), C.M.G., Maj. F. B. Binney (A.), Maj. A. Cleghorn (T.), Maj. E. J. Roberts (A.), Capt. L. I. Barker (A.), Capt. T. G. Bowler (Ad.), Capt. C. H. Dixon (A.), (D.F.C.), Capt. G. Donald (D.F.C.) (A. and S.), Capt. J. R. Howett (A.), Capt. H. L. H. Owen, A.F.C. (A.), Capt. G. W. Roberts, M.C. (A.), Lieut. C. R. Robbins, M.C., D.F.C. (A.), Lieut. F. N. S. Creek, M.C. (O.), Lieut. W. H. Date (S.O.), Lieut. H. G. W. Debenham (A.), Lieut. F. H. Eberli (A.), Lieut. C. F. Falkenberg, D.F.C. (A.), Lieut. W. W. Glenn, M.C. (Ad.), Lieut. C. Harrison (A.) (deceased), Lieut. S. Jones D.F.C. (A.), Lieut. C. S. T. Lavers, D.F.C. (A.), Lieut. D. F. Lawson (A.), Lieut. H. B. Maund (A.), Lieut. P. N. Meltyis (O.), Lieut. F. G. Prince (A.) (deceased), Lieut. C. F. Smith (A.), Lieut. R. H. Somerset (A.), Lieut. C. A. Spence (A.), Lieut. A. G. Stradling (S.O.), Lieut. E. B. Wilson (A.), Lieut. D. Wood (A.).

The notification in *Gazette*, Aug. 5, concerning Capt. H. W. G. Jones is cancelled. The notification in *Gazette*, Aug. 1, is to stand.

The surname of Capt. R. T. Nevill (T.) is as now described, and not Neville as in *Gazette*, Aug. 1.

The surname of Lieut. D. N. Thomson, M.C. (S.O.) is as now described, and not Thompson as in *Gazette*, Aug. 1.

The following temp. appointments are made :—
Director of Operations and Intelligence.—Air Commodore J. M. Steel, C.M.G., C.B.E. (Sept. 8), vice Air Commodore R. M. Groves, C.B., D.S.O., A.F.C.

Staff Officer, 3rd Class.—Air.—Flight Lieut. G. W. Robarts, M.C. (Sept. 3), vice Squad-Leader A. J. Currie.

Staff.—Lieut.-Col. A. E. Borton, C.M.G., D.S.O., A.F.C., is graded for purposes of pay and allowances as Brig.-Gen., Staff; May 1 to July 31.

The following temp. appointments are made :—
Staff Officers, 2nd Class.—Air.—Squad-Leader D. L. Allen, A.F.C., from S.O.1 (Air); Sept. 15. Q.—Capt. F. P. Don (July 18), vice Maj. A. E. Loder.

Flying Branch.

Maj. (Hon. Lieut.-Col.) A. W. H. James, M.C., to be actg. Lieut.-Col. whilst employed as Lieut.-Col. (A.); July 19, 1918, to March 20.

Maj. W. B. Hargrave, O.B.E., is graded for purposes of pay and allowances as Lieut.-col. whilst employed as Lieut.-Col. (A.); May 1 to June 30.

Cpts. to be actg. Maj. whilst employed as Maj. (A.):—C. M. Leman, M.C., D.F.C.; June 10. R. M. Drummond, D.S.O., M.C.; from May 1 to July 31.

The following Cpts. are graded for purposes of pay and allowances as Maj. whilst employed as Maj. (A.):—C. J. Q. Brand, D.S.O., M.C., A.F.C.; to June 30. H. S. Lees-Smith, L. G. S. Payne, M.C., A.F.C.; to May 30. C. A. Ridley, D.S.O., M.C.; to June 30. E. Selby, O.B.E.; to June 30. G. A. Turton; to May 28 (May 1).

Lieuts. to be actg. Cpts. whilst employed as Cpts. (A.):—J. A. Craig, D.F.C., D. F. Lapraik, D.F.C., M. M. Frechill, D.F.C. (June 10 to July 31); May 1.

The following Lieuts. are graded for purposes of pay and allowances as Cpts. whilst employed as Cpts. (A.):—F. J. Cunningham, A. F. Hordern, H. J. Hunter, A. W. Vigers, M.C., D.F.C. (to May 11), (Hon. Capt.) L. W. Jarvis (to July 31), K. B. Lloyd, A.F.C. (to July 31), J. J. Williamson, A.F.C. (to July 31); May 1.

Lieut. P. L. Stephens to be Lieut. (A.) from (Ad.); April 19, 1918.

Lieut. (Hon. Capt.) G. M. Smyth to be Lieut. (Hon. Capt.) (A.) from (S.O.) May 18 (substituted for the notification in the *Gazette* of July 15).

Sec. Lieuts. to be Lieuts.:—I. B. Hyslop; July 18, 1918. R. Clark; March 26. E. Colvill; May 1. A. Russell; July 10. L. F. Homer; July 30. P. F. O. J. B. Lynch (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (A.); June 10, 1918.

D. J. Lewis is granted a temp. commn. as Sec. Lieut. (A.); June 27, 1918. P. F. O. L. H. Kemp (late R.N.A.S.) is granted a temp. commn. as Sec. Lieut. (O.); Sept. 14, 1918.

Sec. Lieut. W. D. F. Liston (Lieut., I.A.R.O.) relinquished his commn. on reversion to I.A.R.O.; Sept. 9.

The following relinquish their commns. on ceasing to be employed :—Lieut. G. C. Stemp (Lieut., E. Kent. R.); May 30. Lieut. H. L. H. Bousted (Lieut., Essex R.); June 11. Lieut. F. H. Prichard (Capt., R.G.A.); July 7. Lieut. C. T. Travers, A.F.C. (Sec. Lieut., Wilts R.); July 11. Lieut. (Hon. Capt.) E. R. Williams (Capt., Manitoba R.); Sept. 8.

(Then follow the names of 75 officers who are transfd. to the Unemployed List under various dates.)

Maj. L. F. Richard (Capt., R.G.A.) relinquishes his commn. on account of ill-health, caused by wounds; Sept. 30.

Capt. C. P. O. Bartlett, D.S.C., relinquishes his commn. on account of ill-health, and is permitted to retain his rank; Sept. 3.

Capt. J. D. Payne, M.C. (Sec. Lieut., Extra Regimentally Employed List) resigns his commn.; Sept. 17.

Lieut. G. P. Blake relinquishes his commn. on account of ill-health caused by wounds, and is permitted to retain his rank; Aug. 16.

Lieut. P. Goodbehere (Manchester R., T.F.) relinquishes his commn. on account of ill-health contracted on active service; Aug. 22.

Sec. Lieut. D. F. Dempster relinquishes his commn. on account of ill-health, and is permitted to retain his rank; Sept. 4.

Sec. Lieut. (Hon. Lieut.) W. J. Bethune (Lieut., Cameron Highrs.) relinquishes his commn. on account of ill-health contracted on active service; Aug. 18.

Sec. Lieut. W. G. Edwards resigns his commn.; Sept. 17.

Sec. Lieut. H. T. Kempton is antedated in his appointment as Sec. Lieut. (A. and S.); May 10, 1918.

The initials of Sec. Lieut. L. G. Crossley are as now described and not "J. G." as stated in the *Gazette* of July 15.

The initials of Sec. Lieut. C. A. Farquharson are as now described, and not "C. D." as stated in the *Gazette* of July 29.

The initials of Lieut. G. H. Windsor are as now described, and not "G. J." as stated in the *Gazette* of July 29.

The surname of Lieut. J. Tomkins is as now described, and not "Tomkins" as stated in the *Gazette* of July 29.

The surname of Lieut. T. M. Johns is as now described, and not "Jones" as stated in the *Gazette* of Aug. 8.

The notification in the *Gazette* of June 17 concerning Sec. Lieut. (Hon. Lieut.) S. J. R. Simmons is cancelled.

The notification in the *Gazette* of July 4 concerning Capt. A. E. Godfrey, M.C., A.F.C., is cancelled.

The notification in the *Gazette* of July 22 concerning Lieut. C. Gilham is cancelled.

The notification in the *Gazette* of July 29 concerning Lieut. J. Coates is cancelled.

Administrative Branch.

The following Maj. are graded for purposes of pay and allowances as Lieut.-Cols. while employed as Lieut.-Cols.:—A. C. E. S. Bowlby, A. R. Woodland; May 1.

Capt. P. Gadsby, O.B.E., is graded for purposes of pay and allowances as Lieut.-Col. while employed as Lieut.-Col.; May 1.

Capt. H. C. Jones to be actg. Maj. while employed as Maj., from Sept. 28, 1918, to Dec. 5, 1918.

Lieut. (actg. Capt.) J. P. P. L. Biggs, M.B.E., to be actg. Maj. while employed as Maj., from Oct. 6, 1918, to April 30.

The following Cpts. are graded for purposes of pay and allowances as Maj. while employed as Maj.:—G. B. Chainey, O.B.E., M. B. O'Brien; May 1. C. P. Cowper; to May 9. (Hon. Maj.) A. F. Morris; to May 31. T. L. Stevens; to July 31.

The following Lieuts. are graded for purposes of pay and allowances as Maj. while employed as Maj.:—(Actg. Capt.) J. P. P. L. Biggs, M.B.E., A. E. Worrall, M.C. (to Aug. 9); May 1.

Capt. F. P. Don to be Capt., from (S.O.); May 31.

Lieut. S. Saunders, M.C., to be actg. Capt. whilst employed as Capt.; from Dec. 14, 1918, to April 30.

Sec. Lieut. G. L. Grey to be actg. Capt. while employed as Capt.; May 1.

The following Lieuts. are graded for purposes of pay and allowances as Cpts. while employed as Cpts.:—H. Gwynne-Smith, C. A. Howe (Hon. Capt.) A. E. Miller, M.C., J. R. Nicholls, S. G. K. Rapley, A. W. Turner; to May 31. J. G. C. Williams; to June 30. (Hon. Capt.) A. D. F. Mackenzie; to Aug. 9. J. Mitchell; to Aug. 9. W. Pilkington, M.C.; to Aug. 9. R. H. Rook, M.C.; to Aug. 9. D. G. Sharp; to Aug. 9; May 1. W. Clay; July 1.

Lieut. H. H. Harman is graded for purposes of pay and allowances as Capt. while employed as Capt. from (O.); from May 1 to June 30.

Sec. Lieut. S. Tew is graded for purposes of pay and allowances as Capt. while employed as Capt.; May 1.

Lieut. L. J. N. Mackay relinquishes the grading for purposes of pay and allowances as Capt. on ceasing to be employed as Capt.; June 26.

Sec. Lieuts. to be Lieuts.:—(Hon. Lieut.) H. S. Gargett; Aug. 23. R. Craig; March 1.

Sec. Lieut. E. V. Evans to be actg. Lieut. while employed as Lieut.; from March 21 to April 30.

Sec. Lieut. E. G. Stott (late Gen. List, R.F.C.) on prob., is confirmed in rank of Sec. Lieut.; May 7, 1918 (substituted for the notification in *Gazette* of Aug. 20, 1918).

The following relinquish their commns. on ceasing to be employed :—Sec. Lieut. J. W. Shaw (Lieut., Oxf. and Bucks L.I.); July 23. Lieut. H. E. R. Twamley (Lieut., Notts and Derby R.); Aug. 12.

(Then follow the names of 15 officers who are transfd. to the Unemployed List under various dates.)

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are permitted to retain their rank :—C. McI. French; July 12 (substituted for the notification in the *Gazette* of Jan. 21). A. F. G. Ovenden (contracted on active service); Aug. 19.

Sec. Lieut. R. Parker (Sec. Lieut., K.R.R.C.) is removed the Service; Sept. 15.

The notification in the *Gazette* of May 23 concerning Sec. Lieut. (Hon. Lieut.) J. W. Gardner is cancelled.

Technical Branch.

Maj. W. J. D. Pryce is graded for purposes of pay and allowances as Lieut.-Col. whilst employed as Lieut.-Col., Grade (B); May 1.

Capt. W. J. Waddington, O.B.E., is graded for purposes of pay and allowances as Maj. whilst employed as Maj., Grade (A); May 1.

Lieut. H. G. Gibbs is graded for purposes of pay and allowances as Maj. whilst employed as Maj., Grade (A); May 1.

The following appointments are graded for purposes of pay and allowances as Maj. whilst employed as Maj., Grade (B):—R. G. L. Candy, W. Millett, W. Wade, O.B.E., H. E. F. Wyncoll, O.B.E., M.C. (to June 30); May 1.

The following Lieuts. are graded for purposes of pay and allowances as Cpts. whilst employed as Cpts., Grade (A):—B. C. Adamson, T. G. S. Babb, E. McR. Cockell, S. S. Dixon, A. R. Langton, F. D. Lugard, F. A. Omerod, E. Pimley, L. H. Straker, R. G. Whitcombe, W. Scott (to July 31); May 1. S. Empsall; June 1.

The following Lieuts. are graded for purposes of pay and allowances as Capt. whilst employed as Capt., Grade (B):—T. Bell, M.M., G. Bowen, F. Briggs, L. E. Carter, R. J. Copley, T. D. Jones, W. R. Lewis, F. G. Murray, (Hon. Capt.) J. Ramsay, M.C., H. J. Skingle, V. F. Spurgeon (to June 30); May 1.

The following Lieuts. are graded for purposes of pay and allowances as Capt. whilst employed as Capt., Grade (B), from (Ad.):—J. W. Gardner substituted for notification in the *Gazette* of Aug 5), H. L. Woolveridge (to June 30); May 1.

Lieuts. to be Lieuts., from (Ad.):—G. D. Daly, Grade (A); July 12. C. R. Pilcher, Grade (B); Nov. 28, 1918.

Lieut. W. W. Bull is graded for purposes of pay and allowances as Lieut. whilst employed as Lieut., Grade (A); May 1.

Sec. Lieut. H. B. Brown to be Lieut., without pay and allowances of that rank; Nov. 24, 1918 (substituted for *Gazette* of Sept. 5).

Sec. Lieut. (Hon. Capt.) J. R. Cassidy to be actg. Lieut. whilst employed as Lieut., Grade (A), from Aug. 22, 1918, to Jan. 10.

The following Sec. Lieuts. are graded for purposes of pay and allowances as Lieuts. whilst employed as Lieuts., Grade (A):—A. Bolton, F. C. North, R. L. Hartley; May 1.

The following relinquish their comms. on ceasing to be employed:—Sec. Lieut. R. Burn (Lieut., N.Z., A.S.C.); June 2. Sec. Lieut. (Hon. Capt.) G. E. Allen (Capt., Manch. R., T.F.); Aug. 25. Lieut.-Col. G. B. Stopford (Maj., R.H. and R.F.A.); Sept. 1.

(Then follow the names of 18 officers who are transfd. to the Unemployed List under various dates.)

The following relinquish their comms. on account of ill-health, and are permitted to retain their rank:—Capt. H. G. Thomas (contracted on active service); Aug. 31. Lieut. P. H. S. Gwilliam; Sept. 5. Sec. Lieut. I. G. Bethwaite; Sept. 3. Sec. Lieut. A. W. Clare; Sept. 8.

The notification in *Gazette* of May 23 concerning Sec. Lieut. R. Donald is cancelled.

Medical Branch.

Flying Officers to be Flight Lieuts.:—J. Ferguson; Aug. 26. T. M. Davies; Sept. 9.

Capt. W. H. H. Bennett, M.B. (Capt., R.A.M.C., T.F.), relinquishes his commn. on ceasing to be employed; Dec. 10, 1918.

(Then follow the names of 8 officers who are transfd. to the Unemployed List under various dates.)

Dental Branch.

Flying Officers to be Flight Lieuts.:—S. C. Turner; Aug. 26. A. Williams; Sept. 2.

Memoranda.

Lieut. S. E. Mailer, A.F.C., to be Hon. Capt.; April 1, 1918.

Sec. Lieut. S. J. Dodson to be Lieut.; Jan. 30.

(Then follow the names of 25 Cadets granted hon. comms. as Sec. Lieuts.)

The following relinquish their comms. on ceasing to be employed:—Temp. Hon. Lieut. H. S. Porter; Aug. 16. Maj.-Gen. E. B. Ashmore, C.B., C.M.G., M.V.O. (Brevet Col., R.A.); Sept. 1. Temp. Hon. Capt. A. B. Rogers; Sept. 13. Temp. Hon. Capt. E. W. Birch, Temp. Hon. Lieut. C. E. Marshall, Temp. Hon. Capt. R. S. Owen, Temp. Hon. Lieut. T. G. Rawson, Temp. Hon. Lieut. F. E. Woodward, Temp. Hon. Lieut. E. A. York; Sept. 16.

(Two officers transfd. to the Unemployed List.)

Lieut.-Col. C. F. de S. Murphy, D.S.O., M.C. (Maj., R. Berks R.), resigns his commn.; Sept. 17.

The following temp. appointment is made:—

Staff Officer, 3rd Class.—(Tng.) Flight Lieut. L. G. S. Payne, M.C., A.F.C.; Sept. 15.

Flying Branch.

Sec. Lieuts. to be Lieuts.:—J. Douglas; April 23, 1918. J. H. W. Goodall; Sept. 28, 1918. W. W. Smith; May 9. L. H. Ridley; June 20. J. M. Dandy; June 24.

The following Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts.:—D. P. Fulton (A.); July 26, 1918. T. L. J. Jackson (A.); April 22. T. G. Brooke (A. and S.); Aug. 23, 1918.

The following relinquish their comms. on ceasing to be employed:—Sec. Lieut. A. C. Gill; Jan. 13 (substituted for the notification in the *Gazette* of Jan. 28). Capt. D. B. M. Hume; Jan. 15 (substituted for the notification in the *Gazette* of Feb. 25). Sec. Lieut. S. W. Gee (Lieut., Can. Supply Col.);

Feb. 15. Lieut. L. de S. Duke (Lieut., actg. Capt.) Brit. Col. R.); June 27, Sec. Lieut. (Hon. Lt.) H. H. Heal (Lieut., Quebec R.); Sept. 1. Sec. Lieut. J. S. Blanford, D.F.C. (Sec. Lieut., E. Kent R.); Sept. 4. Lieut. D. A. A. Shepperson (Lieut., Som. L.I.); Sept. 10.

(Then follow the names of 62 officers who are transferred to the Unemployed List under various dates.)

The following relinquish their comms. on account of ill-health, and are permitted to retain their rank:—Capt. J. A. Hutchinson; May 20 (substituted for notification in *Gazettes* of Jan. 24 and Aug. 8). Sec. Lieut. T. R. Adair (caused by wounds); July 10. Sec. Lieut. E. L. Goold; Sept. 5.

Sec. Lieut. J. A. Griffin relinquishes his commn., being physically unsuited for the duties of Pilot or Observer; Feb. 14 (substituted for notification in *Gazette* of Dec. 3, 1918).

Sec. Lieut. O. F. G. Crosby is antedated in his appointment as Sec. Lieut. (A.); May 10, 1918.

The surname of Sec. Lieut. A. E. Amey is as now described, and not "A. E. Amy," as stated in *Gazette* of Sept. 3, 1918.

The notification in the *Gazette* of April 1, concerning Lieut. B. N. Wills, is cancelled.

The notification in the *Gazette* of April 4, concerning Lieut. C. M. Shilcock, is cancelled.

The notification in the *Gazette* of July 15, concerning Sec. Lieut. J. A. Tomson, is cancelled.

The notification in the *Gazette* of July 29, concerning Sec. Lieut. J. P. Jones, is cancelled.

Administrative Branch.

Lieut. E. L. Ridley to be Lieut., from (A. and S.); Dec. 12, 1918 (substituted for notification in *Gazette* of Mar. 7).

Sec. Lieuts. to be Lieuts.:—H. V. Hall; Aug. 27, 1918 (substituted for notifications in *Gazettes* of Mar. 7 and Aug. 15). D. J. Fryer; Mar. 13. H. C. Bird; April 19.

Sec. Lieut. H. J. Payne to be actg. Lieut. whilst employed as Lieut. (from Nov. 23, 1918, to April 30).

Sec. Lieut. H. J. Payne is graded for purposes of pay and allowances of Lieut. whilst employed as Lieut.; May 1.

(Then follow the names of 21 officers who are transferred to the Unemployed List under various dates.)

Sec. Lieut. G. B. Blake relinquishes his commn. on account of ill-health, and is permitted to retain his rank; Aug. 14.

Technical Branch.

Lieut. A. C. Blackmore is graded for purposes of pay and allowances as Capt. whilst employed as Capt., Grade (A.); from May 1 to July 2.

Lieut. J. D. Robinson to be Lieut., Grade (B.), from (A.); Nov. 21, 1918.

Sec. Lieuts. to be Lieuts.:—(Hon. Lieut.) J. E. Spickernell; April 2, 1918 (without pay and allowances of that rank prior to Sept. 14, 1918). (Hon. Lieut.) G. A. Tilly; April 2, 1918 (without pay and allowances of that rank prior to Feb. 9).

Sec. Lieuts. to be Lieuts., without pay and allowances of that rank:—F. Denham; Mar. 13. A. R. Conder; April 19.

Lieut. W. Barber (R.N.) relinquishes his commn. on ceasing to be employed; Aug. 21.

(Then follow the names of 21 officers who are transferred to the Unemployed List under various dates.)

Lieut. B. A. Hill relinquishes his commn. on account of ill-health, and is permitted to retain his rank; Sept. 11.

Sec. Lieut. T. E. Lomas relinquishes his commn. on account of ill-health and is permitted to retain his rank; Sept. 8.

The notification in the *Gazette* of July 22 concerning Capt. F. Reynolds, is cancelled.

Medical Branch.

Wing Comdr. (actg. Group Capt.) T. D. C. Barry is transferred to Unemployed List; Aug. 31.

Memoranda.

90984 Cadet H. T. Collins is granted an hon. commn. as Sec. Lieut.; April 2.

The following temp. Hon. Lieuts. relinquish their comms. on ceasing to be employed:—T. Leopard; June 16. H. S. Burdett; Sept. 16.

(Two officers transferred to the Unemployed List.)

The notification in the *Gazette* of Sept. 5 concerning Sec. Lieut. T. A. Bayly is cancelled.



Roll of Honour

Published September 8.

Previously reported missing, now reported killed.—McLAREN, Sec. Lieut. F. M., R.F.C.

A Murmansk Success

IN the announcement issued by the War Office on September 19 concerning operations in North Russia it was stated that the Bolshevik fleet of 15 vessels, which sailed north-east from Petrozavodsk to intercept one of our columns which was being landed on the west shore of Lake Onega, was attacked by our aircraft with machine-guns and bombs and forced to return to its harbour in confusion.

Raids on Kronstadt

ON the night of September 13 British aeroplanes again bombed Kronstadt and although they were heavily fired on they did not suffer any loss.

The Finnish General Staff reports that on the night of the 15th inst. artillery fire was heard and fires were observed in the direction of Kronstadt. British aeroplanes were in action during the night. The General Staff adds that one machine fell into the sea while descending in the neighbourhood of Bjoerkoe, and the pilot was drowned.

A message from Helsingfors on September 18 stated that in the British raid on Kronstadt on the previous night both fighting and bombing machines took part. The night was dark, rainy, and windy. When starting, a small plane fell into 3 ft. deep of water. The airman was killed and the machine smashed. Two other machines subsequently came down and two officers are missing. The rest of the machines reached Kronstadt and fulfilled their task.

According to the Bolshevik version one bomb set fire to an empty barn. They also claim to have brought down an Ilia Murometz machine.

Airship Services to India

Two British flying officers, Lieut. Crichton and Lieut. Coombs, are reported to have arrived at St. Raphael (Var) from London by aeroplane on the evening of September 13 and to have left for Taranto on September 15 in connexion with the proposed London to Bombay service by dirigible.

New Use for an Aerodrome

THE Huntingdon County Council is considering a proposal to purchase Wyton aerodrome from the Disposals Board. The aerodrome, which is four miles from Huntingdon, occupies a site of over 200 acres. It is equipped with many permanent buildings, as well as hutments, and it is suggested that the buildings might be used as a sanatorium and the land developed as a farm colony.

A Course in Aeronautical Engineering

THOSE who wish to study aeronautical engineering should note that the Regent Street Polytechnic have arranged a most comprehensive series of evening classes covering aero-mechanics, principles of aeroplane design and construction, workshop practice, aero-engine design, propeller design, draughtsmanship, etc., arranged so that it can be adequately completed in three years. The lecturers are Mr. E. P. King, B.Sc., Mr. F. S. Hill, B.Sc., Mr. H. Shaw, B.Sc., A.R.C.S., Maj. A. Graham Clarke, M.I.A.E., and Mr. H. S. Bourne. As the course commences on Monday, September 29, those who contemplate joining the classes should lose no time in obtaining the syllabus from the Polytechnic 307-311, Regent Street, W. 1.

LONDON-PARIS AIR SERVICE

On the completion of the first month of the daily aeroplane service between London and Paris, organised by Aircraft Transport & Travel, we have received from the Chairman, Mr. G. Holt Thomas, some particulars of the results obtained.

Mr. Holt Thomas started this service on August 25 to demonstrate to the business world, by actual daily flying, that aeroplanes will not only transport passengers and goods at 100 miles an hour, but will do so commercially to a fixed time-table, and the first month's work—which has demonstrated, day by day, the fact that, for the first time in the history of mankind, London and Paris are, by "air express," only 2½ hours' distant from each other—is a record of which Aircraft Transport & Travel may well be proud. Out of a possible 56 flights between London and Paris during this first four weeks, they have satisfactorily completed 54. On one occasion, when there was a 100 miles an hour hurricane, it was considered advisable to divert the load of a machine to an alternative route; and on another occasion, after starting a flight rather late owing to atrociously bad weather, a pilot had a forced landing through oil pressure trouble, which so delayed him that he considered it unwise to proceed owing to the impending darkness.

As showing the dependability in operation which can be attained already with a suitable aeroplane, when handled with skill, it is emphasised that only twice, during 13,750 miles flying, has it been necessary for a pilot to make a compulsory descent; and in one of these two cases, after five minutes' delay, he was in the air again.

Mr. Holt Thomas has been asked why they chose London-Paris as a demonstration route, seeing that the weather encountered is probably the worst in the world. His reply is that they selected that route deliberately. They were confident of their pilots and machines. They knew the belief which was prevalent that commercial flying was only a fair weather proposition. They said to themselves, "If we can fly reliably on this route we can go with confidence

anywhere else in the world." In the month's weather they have just flown through the official reports show that on only three days were conditions really favourable. On 13 days they were distinctly unfavourable, while on eight days, though their machines actually got through, the official reports showed that the conditions were considered "unfit" for flying.

Mr. Holt Thomas adds that the credit for this month's really wonderful flying, which has done more than anything else has ever done to convince thinking people that the era of commercial flying has already dawned, is due entirely to the ex-officers and pilots who, under his direction, have organised and flown this service. In their capacity as indefatigable organisers he pays sincere tribute to Brig.-Gen. F. L. Festing, C.B., C.M.G., who resigned his post as Deputy Master General of Personnel at the Air Ministry to join Mr. Thomas as Managing-Director of Aircraft Transport and Travel; also to Capt. D. M. Greig, O.B.E., late of the Department of Aircraft Production; while last, but far from least, he pays tribute to those pilots—the finest he is convinced in the world—who have flown through weather which even experts have considered impossible. To these pioneers of commercial flying—to Capt. Baylis, Capt. Riley, Lieut. Shaw, Lieut. Lawford and Lieut. McMullin—they owed a debt of gratitude it was hard to express in words. Their flying, their enthusiasm, their good judgment—these had been magnificent.

To use this 100 miles-an-hour service on urgent occasions when "time is money" is, as Mr. Thomas points out, not only a sound business proposition—as those who are now using it daily would be the first to testify—but it is something far more than this. It is a definite encouragement to British aviation, which, first as it was in war, is now faced with the task of maintaining that proud position during the days of peace, a task which it can only hope to accomplish by the interest and support of the public.

London to Brussels Air Service

THE Handley Page London-Brussels air service commenced on Wednesday, the same type of machine being used as that which is so successfully carrying on the London-Paris service. Ten passengers with 30 lb. each of personal luggage, in addition to 500 lb. of general freight, can be carried. The seats are numbered and can be booked at all the usual agents or at Handley Page Transport (Ltd.), Cricklewood. Private landaulettes will await the passengers at each aerodrome and convey them to the centre of the city. The service will leave London on Mondays, Wednesdays, and Fridays, returning on Tuesdays, Thursdays, and Saturdays.

The Business Aeroplane

HAVING decided to employ an aeroplane as part of its regular organisation, Messrs. S. Instone and Co., steamship owners and general export and import merchants, of Cardiff, have purchased from the Air Ministry a large machine with Rolls-Royce engines, and have engaged as pilot Lieut. F. L. Barnard, who holds the record number of cross-Channel flights.

Besides using the machine for the purpose of transporting urgent papers, samples, etc., the firm intends that it shall be utilised to enable heads of departments to get into personal touch quickly with foreign buyers.



The Edmond de Marçay single-seater biplane, which, piloted by Lieut. Lebeau, at Villacoublay, attained speeds of 156 m.p.h. level, 147 m.p.h. at 10,000 ft., and 129 m.p.h. at 20,000 ft. It is fitted with a 300 h.p. Hispano-Suiza engine, and has a span of 30 ft. 4 ins., overall length of 21 ft. 4 ins., and a useful load of 745 lbs. Its factor of safety is 14.

SIDE-WINDS

RECENTLY a new Order in Council was issued by the Home Office touching upon the regulations which govern the manufacture and supply of acetylene compressed in cylinders, known as dissolved acetylene. The Dissolved Acetylene Co., Ltd., formerly the Acetylene Equipment Co., Ltd., sole manufacturers of D.A. (dissolved acetylene) and who, we understand, are the largest suppliers of this gas in Great Britain have made careful tests and experiments in regard to the question of acetylene cylinders and gas, with the object of maintaining their standard of quality and adhering in all respects to the Home Office regulations.

SOME time ago, acting upon Home Office recommendations, they commenced the reconstruction and re-testing of all cylinders with the object of improving their durability. They have now introduced an entirely new form of cylinder made from a steel shell solid drawn from one piece. This type of cylinder has previously been obtainable only in heavy sections, which would have made the cost of transport prohibitive. Final experiments, however, have now led to the production of this type of cylinder in a section light enough for transport, but at the same time heavy enough to withstand the hydraulic test pressure of 1,000 lb. per sq. in., which exceeds that specified by the Home Office regulations, i.e., four times the working pressure, the latter being increased under the new Order from 150 lb. to 225 lb. per sq. in. These cylinders after testing, are filled with the necessary porous material and acetone, then fitted with valves and filled with acetylene ready for use. These processes are carried out at the company's works, the cylinder being thus manufactured entirely in Great Britain by British labour. The Dissolved Acetylene Co. supply their gas under a guarantee of purity, and it may be mentioned that the gas, after generation, is treated by six processes of purification, so as to extract all moisture and impurities.

"SUMMER-TIME" ends during the night of September 29-30 and at 2 a.m. we resume normal time again. It will be necessary for clocks to be put back one hour, and for the information of the many users of "Pulsynetic" clocks we are informed by the makers that the best method of altering electric clocks of the "Pulsynetic" class is to stop the pendulum of the transmitting clock for one hour, and this recommendation also applies to ordinary domestic striking clocks, as in these it is fatal to put the hands backwards. "Pulsynetic" clock systems which include in their circuits public or turret clocks, should be altered after dusk on Sunday night; but works and factory systems—of which there is now a large number—can be more conveniently stopped on Saturday after closing time, provided, of course, that a public clock is not connected with the system.

An excellent suggestion in connection with watches—given by an expert watchmaker—is to put the watch quickly back to, say, seven or eight minutes beyond the necessary hour, then slowly turn the hands forwards to the correct time. When the watch is put back slowly to the correct time there is the danger of stopping the watch, and if not noticed the results may be, to say the least, inconvenient.

IN order to cope with their greatly increased business—both export and in London and the Home counties—Messrs. Dunford and Elliott (Sheffield), Ltd., the well-known firm of steel manufacturers, have found it necessary to open their own offices in London, at 4, Copthall Buildings, Copthall Avenue, E.C. 2, and in future all communications in connection with steel, etc., for export or for delivery in London and the south of England, should be sent to the new address. The general management of the London office is in the hands of Mr. Ivor S. Winby, who has hitherto controlled Messrs. Dunford and Elliott's export business, whilst the services of their London agent, Mr. E. St. Clair Duncan, are retained in the capacity of sales manager.

IN these days, when so much is heard of the lauded enterprise of almost every other country but our own, it is refreshing to record an instance of British brains, British capital and British inventiveness, making headway against all comers. Little more than two years ago Messrs. Madgwick, Ltd., patentees and proprietors of the well-known "M-Ten" crates and boxes, took in hand the problem of packing. They designed a collapsible crate or box so constructed that while it requires neither nails or screws, hinges or wires, it is capable when put together of holding any kind of merchandise, from the heaviest to the lightest. An ingenious system of interlocking the parts makes it perfectly rigid,

therefore it can be used for packing goods in precisely the same manner as the ordinary nailed-up crate or box, and can be used time after time. When empty the case can be collapsed, and top, sides, bottom and ends fold up as flat as a book. Thus saving 80 per cent. storage room.

THAT this invention had a great future before it there was no doubt, but it is entirely due to the energy of the patentees and proprietors that, in the short space of time mentioned above, they have outgrown their original works at East Row, N. Kensington, and are removing to a splendid site in Sudbury, Middlesex. There they have erected large works to cope with the ever-increasing flood of orders. That these crates and boxes are appreciated alike by users and railway companies is evidenced by the fact that, first, they are being used by the leading firms in nearly every line of business, and, second, the railway companies will accept goods packed in these crates and boxes at company's risk. Messrs. Madgwick will be in their new premises in October, and will be glad to demonstrate their speciality to any manufacturer who desires to find an easy way out of the packing problem. The new premises will be known as "M-Ten" Works.

A METHOD of "sealing" these cases has been adopted and has met with the unqualified approval of the Railway companies. Any ordinary rigid and nailed-up case—whether banded, wired or other means are used—is "easy" to the average railway thief armed with jemmy and nail-drawer, and not the slightest sign of pilferage is left behind. The "M-Ten" case, however, when sealed in the approved manner, is claimed to be positively pilfer-proof and will defy the efforts of the experts—goods cannot be extracted or tampered with without leaving behind the obvious signs that will "stop" the case in transit and on which the railway companies will make good losses, without demur.

MR. CLARENCE WINCHESTER'S resignation from the Grahame-White Co., Ltd., Hendon, takes effect at the end of this month.

CAPT. TRUELOVE and his red and yellow Avro have arrived safely in Spain. Gen. Echague, commanding the Spanish Flying Corps, has been taken up by Capt. Truelove, and much enjoyed his flight. He displayed great interest in the type of machine on which the British fighting pilots were trained. It is understood that His Majesty King Alphonso is acquiring this Avro.

"LA SOCIÉTÉ FRANÇAISE BARIMAR" is the title of a company which has recently been formed in Paris, with a capital of £5,000, to exploit the Barimar scientific welding processes in France, Tunis and Algeria. The factory, which is situate at 48, Rue d'Alsace, Clichy (Seine), is under the personal supervision of Mr. Cyril Rose, an assiduous engineer, deeply interested in metalliferous subjects. Mr. Rose, who has taken a leading part in the establishment of the new company, is constantly investigating the problems of metal fusion, with the one object of obtaining the very best results from modern scientific welding processes, and, under his able management, the French branch should speedily thrive.

THE Lep Transport and Depository, Ltd., whose confidence in commercial aviation was manifested by the opening of their magnificent Aerial Travel Office in Piccadilly Circus on May 1—the opening day of civil aviation—have now opened a temporary office as aircraft brokers at Hounslow. The functions of the department are similar to those of a shipbroker, i.e., clearing machines and their cargoes through Customs, both on outward and inward journeys, for which a scale of inclusive charges has been prepared. Mr. R. A. Loader, who is in charge of the department, will give all available assistance to aerial transport firms and their pilots, both in Customs formalities and in regard to the booking of passengers and facilities for collection, delivery and handling of freight.

A BOOKLET which will be found of considerable use by those who use Exide Starting and Lighting batteries has just been issued by the Chloride Electrical Storage Co., Ltd. The booklet deals with the charging and operating of both Exide and Clifton batteries in ebonite boxes; it is written in very simple language, and a diagram showing the connections of the charging circuit, when using lamps as resistances, is given. A copy is sent out with each battery, but the Chloride Co. will be pleased to send a copy to anyone who would be able to make use of it if they address their application to the head office at Clifton Junction, Manchester.

Aeroplanes to Link the Nations

MR. F. HANDLEY PAGE was the guest of the Cheltenham Chamber of Commerce on Saturday evening, Sir J. T. Agg-Gardner, presiding over the gathering.

Mr. Handley Page, replying to the toast of "Our Guest," said that he felt the honour had been done him because he happened to have been associated with the heroes of one branch of the service—namely, the R.A.F., the great men who had fought for us in the air with undaunted courage and the boys from school who had given eyes to the Army. His particular part had been to supply the airmen with machines and in doing this it had been a most interesting thing to tackle the various problems one had to face.

Now they were turning their thoughts to peace, and these same big machines, which had been got ready for bombing Berlin, could easily be transformed into other uses. Already a service was running between London and Paris, carrying seven passengers a day and a considerable amount of goods, and before long week-end trips from Cheltenham to the Riviera should be possible at moderate cost. The greatest benefit from such a service as this, however, would be the increased knowledge one nation would gain of another. Wars arose out of misunderstanding. He believed the best League of Nations would be built, not out of paper, but out of the aeroplane, which would provide increased facilities for nations to know each other better and thereby promote a more perfect understanding of the world over.

M. Fokker Talks

RECENTLY interviewed at Amsterdam Mr. A. H. G. Fokker stated that in 1916 the German Army authorities asked him to make a cheap aeroplane capable of flying about four hours, to be steered by wireless and to carry a huge bomb. It was intended to send these machines aloft in groups, to be controlled by one flying man. They had lost faith in big guns. Fokker says he prepared the plans but the German War Office decided to make the machines in Government factories, with the result that they bungled along for months. Then, in the summer of 1918, they gave a huge order for wireless-controlled aeroplanes to M. Fokker, and he was just ready to manufacture them in wholesale quantities when the Armistice was signed.

M. Fokker also spoke of his idea of gliders, which could be towed by an aeroplane, then cut loose and allowed to glide down to the particular place at which the passenger wished to alight.

Industrial Problems

THROUGH the courtesy of the Corporation of London, a series of fortnightly lectures on Industrial Problems will be delivered at the Guildhall, at 4.30 p.m., commencing on October 7. The speakers will include Mr. E. J. P. Benn, Professor Ripper, D.Sc., C.H., Dr. Russell Wells, the Rt. Hon. Sir Auckland Geddes, M.P., Sir George Paish and the Rt. Hon. Lord Emmott, G.C.M.G., G.B.E.

Tickets for this series can be had on application to the Secretary, Industrial League and Council, 66, Victoria Street, S.W. 1.

Whitley Councils

THE Industrial Reconstruction Council and the Industrial League, who are amalgamating under the new title of the Industrial League and Council, have arranged a series of fortnightly conferences dealing with the working of Whitley Councils set up in the road transport, silk, wool and allied textiles, pottery, building and glove industries.

The first of these conferences will take place on September 30 at 6 p.m., in the hall of the Institute of Journalists. All who are interested in the movement are invited to attend.

A similar series of conferences on scientific management will take place in the same hall on alternate Wednesdays at 5.30 p.m., commencing on October 8.

PUBLICATION RECEIVED

Notes on the Variation of Atmospheric Conditions with Altitude. By C. F. Dendy Marshall, M.A., Munitions Inventions Department, Ministry of Munitions. London: His Majesty's Stationery Office. Price 6d. net.

NEW COMPANIES REGISTERED

CLYNO ENGINEERING COMPANY, LTD.—Capital £120,000, in £1 shares. Acquiring business of an aeroplane, engine, and motor car manufacturer carried on at Wolverhampton, by F. Smith, as the "Clyno Engineering Company." First directors: H. B. Charles and F. W. A. Smith.

VINCENT FERRAND, LTD., Stockbridge Garage, Stockbridge, Keighley.—Capital £3,000, in £1 shares. Manufacturers and dealers, etc., in aeroplanes, airships, motor cars, etc. First directors: V. W. Ferrand, W. Leach and W. H. Deakin.

H. J. OAKLEY AND JONES AND CO., LTD., 156, Goswell Road, E.C.—Capital £20,000, in £1 shares (3,000 preference). Agricultural, aeronautical, etc., and general engineers, etc. First directors: H. J. Oakley and J. Horsburgh.

Artists Wanted

ARTISTS used to rapid free-hand sketching (motor car, chassis and mechanical details) are required immediately for several weeks' work in connection with the forthcoming Olympia Motor Show. Applicants should apply to the Editor of the *AUTO*, 36, Great Queen Street, Kingsway, W.C. 2.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

APPLIED FOR IN 1918

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published September 18, 1919.

- 10,270. S. A. FLOWER and E. E. W. BUTT. Airships. (131,397.)
 - 10,391. SIR W. G. ARMSTRONG, WHITWORTH AND CO. and L. J. MESURIER. Apparatus for arresting of airships. (131,398.)
 - 11,747. A. CARDOSO. Propulsion of air, etc., vehicles. (118,099.)
 - 13,193. SIDDELEY-DEASY MOTOR CAR CO. and F. M. GREEN. Aircraft propellers. (131,419.)
 - 13,205. M. F. HUXLEY. Aerofoils. (131,420.)
 - 13,533. A. V. ROE. Extensible coupling for safety belts, etc. (131,450.)
 - 16,283. C. BATES. Propulsion of aircraft. (131,497.)
 - 16,295. G. E. DAVIES. Parachute. (131,498.)
- Published September 25, 1919
- 9,089. J. HIGGINBOTTOM. Planes of aeroplanes. (131,627.)
 - 10,218. H. F. WHITE and F. W. CHAPMAN. Strainers for tension-wires, etc. (131,630.)
 - 10,862. A. J. A. W. BARR and H. LAZELL. Dopes. (131,641.)
 - 10,904 and 10,907. PARNALL AND SONS and H. BOLAS. Mounting of aero engines. (131,645 and 131,646.)
 - 11,090. P. LEVASSEUR. Aerial propellers. (131,648.)
 - 11,094. W. G. TARRANT and W. H. BARLING. Framework of aeroplanes. (131,649.)
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